Three new ways to let train crews know when a detector spots a **hotbox** . . . . p. 25

July 24, 1961

RAILWAY AGE WEEKLY

Special Report from Europe

PERFORMANCE TESTS ON NEW DIESEL-HYDRAULICS FOR SP, D&RGW

p. 20

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Washington enters WP battle

The Justice Department wants the ICC to dismiss both the SP and Santa Fe applications for control of WP. Hearings are now under way in San Francisco ..... p. 9

ICC approves PU&D charges in East

In approving the new charges—which will bring several eastern roads an additional $7 million a year—the ICC noted the "huge" deficits incurred in handling LCL traffic p.19

Krauss-Maffei tests diesel-hydraulics for SP, D&RGW

A "Special Report from Europe" describes the successful road-testing of one of the 4,000-hp diesel-hydraulic locomotives being built in Germany for two U.S. railroads p.20

How to tell crews about hotboxes

Three major railroads have developed new ways to let train crews know when a detector spots a hotbox. One sets signals to stop the train; the others rely on radio p.25

Higher capital spending seen

Revised estimates now put capital expenditures for 1961 at more than $650 million—nearly $100 million more than earlier reports had indicated p.32

Pushbutton sorting speeds mail

No. 7 in Railway Age's "Operation Speed-Up" series describes the Southern Pacific's fast new million-dollar handling facility at Oakland, Calif. p.33

The Action Page—'4 Freedoms'—More Needed?

The railroads' "four freedoms" program is excellent—but isn't likely to be achieved without effective governmental machinery to attain and maintain the freedoms p.46

Departments

Dividends Declared 43
Freight Carloadings 39
New Equipment 39
New Products Report 37
Operation Speed-Up 33
People in the News 42
Railroading After Hours 14
Railway Market 39
Revenues and Expenses 34
Supply Trade 42
The Action Page 46
Watching Washington 10
You Ought to Know 44

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WEEK AT A GLANCE

Short and Significant

New president of the DM&IR . . .

is Daniel J. Smith, who takes office Aug. 1. Mr. Smith, president of a number of U.S. Steel Corp. railroads since 1945, succeeds the late Fred J. Voss.

A new 'fold-a-way' bulkhead for box cars . . .

has been successfully tested and is being marketed by Youngstown Steel Car Corp. Two bulkheads per car operate on the same principle as Yocar's "Rollok" gondola bulkhead.

Criticism of Emergency Board report . . .

on the Yardmasters wage and rules dispute came last week from RYA's negotiating committee. RYA said the recommendations do not provide acceptable terms for agreement.

The 'world's most advanced microwave system' . . .

went into operation in Canada July 22. Built by RCA for Canadian National, the $25-million, 1,300-mile system connects Grand Prairie, Alta., and Mt. Dave, Yukon Territory.

B&M has rejected tax relief . . .

of $1.5 million a year in Massachusetts, because to qualify it would have to declare a moratorium on employee layoffs and agree to maintain all present services.

Southern has offered to buy Georgia & Florida . . .

subject to court and ICC approval. A. W. Jones, G&F receiver, and D.W. Brosnan, executive vice president, Southern, said G&F's future was "in grave doubt" if the offer were rejected.

554 passenger-train cars . . .

were on order as of July 1, compared with 862 a year ago. Orders include 260 rapid transit cars, 83 coaches, 135 baggage cars, 35 postal cars (all domestic) and 41 coaches for Brazil.

Current Statistics

Operating Revenues	
5 mos., 1961	$3,622,223,954
5 mos., 1960	4,065,456,192
Operating expenses	
5 mos., 1961	2,982,789,099
5 mos., 1960	3,196,180,433
Taxes	
5 mos., 1961	392,280,975
5 mos., 1960	450,431,799
Net railway operating income	
5 mos., 1961	86,601,151
5 mos., 1960	273,539,570
Net income estimated	
5 mos., 1961	17,000,000
5 mos., 1960	195,000,000
Carloadings revenue freight	
27 wks., 1961	14,016,746
27 wks., 1960	16,147,569
Freight cars on order	
July 1, 1961	11,821
July 1, 1960	29,555
Freight cars delivered	
6 mos., 1961	18,782
6 mos., 1960	31,402

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Washington Enters WP Battle

► **The Story at a Glance: A rapidly-growing mass of fact, figure and opinion last week testified to Southern Pacific's determination to win control of Western Pacific. ICC hearings in the WP control case began Monday morning, July 17, in San Francisco—and SP went right to work to build a record on why it wants Western Pacific and how operations of the two roads can be coordinated to eliminate duplications and cut costs.**

Under the rules of the hearing—no cross-examination of railroad witnesses at this time—the first week was all SP. Santa Fe, rival suitor for well-endowed WP, will get its turn when SP finishes presenting its case. Cross-examination will come later, after testimony is in from the opening San Francisco hearings and shorter sessions in four other western cities.

Meanwhile, however, the U. S. Department of Justice is trying to have the whole case thrown out. Both applicant roads and certain intervening carriers have already acquired blocks of WP stock—and, as the Department sees it, this constitutes a violation of Interstate Commerce Act provisions for acquisition of control.

With the wry good humor of Examiner Paul C. Albus and an occasional skirmish between rival batteries of lawyers adding the human-interest touch, Southern Pacific and Santa Fe have come face to face in their dead-serious fight for control of Western Pacific. It's a battle nine months in the making—and it's one that will take a lot longer than that to resolve.

Opening presentations by SP indicate that the lines roughed out in pre-hearing battling will be maintained. Southern Pacific contends that primary competition today comes from other forms of transport, that elimination of waste and duplication among railroads is essential, that an SP-WP combination can provide better service at lower cost—and that the sum of SP and WP isn't monopoly. Santa Fe won't buy it for a minute. ATSF contends that the fundamental issue is competition vs monopoly—and that an end-to-end Santa Fe-WP combination will assure that competition is maintained.

The Justice Department wants both SP and Santa Fe spanked and sent home (along with the intervenors who have also acquired WP stock in connection with the control dispute). Justice has filed a motion for summary dismissal and has also asked the ICC to order the roads involved to divest themselves completely of all holdings in WP stock.

About 50% of WP common is held by parties to the proceedings—approximately 20% by Santa Fe and 10% each by SP, Great Northern, Union Pacific.

[The Justice Department also asked the ICC to dismiss the competing applications of New York Central and Chesapeake & Ohio for control of Baltimore & Ohio. In Washington, Examiner John Bradford—before adjourning the B&O hearings until Sept. 11—said he would rule on the motion for dismissal in his proposed report to the Commission.]

Early SP testimony indicated the railroad had a pretty good idea Justice was going to take a hand. SP President D. J. Russell noted that Southern Pacific Land Company has acquired 182,300 shares of WP. But, he declared, "the stock is held for investment. It will not be held for purposes other than investment unless and until such time as the Commission may authorize Southern Pacific control of Western Pacific."

SP's application for control of WP, Mr. Russell testified, was filed "to permit the achievement of various efficiencies and economies through coordinations of operation. . ."

Actual control, he said, is essential, because "we have learned that it is very difficult for rail carriers having no corporate relationship to reach agreement on any real consolidation of facilities, particularly of the type and scope that we are here proposing."

President Russell denied that SP has made any effort to exert control over WP. Then there was this exchange between SP attorney and SP president:

Q. Has Western Pacific maintained complete independence from Southern Pacific since Southern Pacific Land Company acquired its present stock ownership in Western Pacific?

A. Yes, very decidedly so.

(WP directors and management are solidly backing the application of Santa Fe and have given flat rejection to SP's proposals.)

B. F. Biaggini, SP vice president—executive department, followed Mr. Russell to the stand and was even more

Rail Consolidation and the Law

Here's the position of the U. S. Department of Justice, as expressed in the WP control case by L. L. Jones, chief of the San Francisco office of the Antitrust Division:

"Practically every major railroad in the United States is considering or moving in the direction of merger or consolidation. The consequences of this movement, both human and financial, are tremendously far-reaching. In these circumstances, we think it crucial that the strict procedures laid down by the Congress in Section 5 of the Interstate Commerce Act for the acquisition of control of carriers be meticulously observed.

"But in our view, the applicants and certain supporting railroads, through their various consummated acquisitions of Western Pacific stock—placing almost 50% of Western Pacific stock in their respective hands—have totally disregarded the statutory mandate. For we believe that the Commission's jurisdiction under Section 5 extends to *all stock transactions* looking toward the acquisition of control of a carrier and that no isolated part thereof may be lawfully consummated without Commission approval. This important principle has, in our view, been violated by the Southern Pacific, the Santa Fe and some . . . intervenor railroads.

"Accordingly, we have asked the Commission summarily to dismiss their applications in the compelling public interest of ensuring total compliance with the statute."

explicit in telling why control is essential if proposed SP-WP coordinations are to be made.

"Unless there is some compelling influence on both sides," he said, "experience has clearly demonstrated that it is very difficult for two rail carriers —without one having some control over the other—to reach agreements for coordinations of facilities. . . Southern Pacific management has been talking to Western Pacific management for years about some of these proposals, but without result."

Eighteen specific coordination projects have been developed by SP in the current case. The list includes 11 coordinations of line-haul operations between various points; five terminal coordinations; consolidations at Sacramento; and consolidations of SP and WP shop operations at Sacramento. Together, SP estimates, the 18 projects will produce annual savings totaling $6.2 million.

Mr. Biaggini cited a half-dozen benefits which SP says the coordinations will provide the public:

- Savings from coordinations "will strengthen both carriers and will minimize the need for future rate increases. In addition, the cost savings will strengthen the financial ability of both roads to press forward their programs for additional equipment and better facilities."
- Freight service speed and dependability could be improved through coordination of the best lines of each road. As examples, he said, SP trains between the East and the Pacific Northwest could save 54 miles and two to three hours running time by using a section of WP line in western Nevada; WP freights between Sacramento and Oakland could save 45 miles and about two hours by using a piece of SP railroad.
- Coordination "will substantially broaden the base of freight-car supply for shippers served by both railroads."
- "Faster and more efficient operations will increase both freight car availability and utilization."
- Joint use by the two roads of each other's most efficient yard facilities "will result in improved service for the pickup and spotting of cars and the movement of cars into and out of terminals."
- The accelerated pace of highway construction and street improvements in the area "presents a real problem in the installation of grade-crossing protective devices and grade separation structures." Proposed coordinations "will provide numerous opportunities for the elimination of grade crossings . . . (and this) will save many millions of dollars in grade-crossing projects which would otherwise be required, with a consequent direct saving to the taxpaying public."

Current investigations have been

(*Continued on page 43*)

WATCHING WASHINGTON WITH WALTER TAFT

Mr. Taft is on vacation. During his absence this column is being written by other members of the staff.

• **THE SENATE HAS PASSED,** without amendment, the REA Express "survival bill," H.R. 1986. Already passed by the House of Representatives (RA, June 5, p. 10), the measure now goes to President Kennedy for signature. Purpose of the bill is to repeal provisions of the 1916 Mail Pay Act. These provide for the Postmaster General to obtain from the ICC information on revenue received by railroads from express companies for transport of express, then to reduce Post Office Department rates for carriage of non-first-class mail to the level of express rail rates, if the express rates are lower.

ICC HAS CONTENDED that the provisions of the 1916 law could not be complied with, because contractual arrangements between railroads and REA in the past have not involved payment of rates, as such. REA's reorganization, however, has changed the method of operation of the express company to a profit-and-loss basis, under which it can be construed that rates are being paid.

THE DANGER TO REA has been that the railroads might be forced to abolish the agency rather than run the risk of substantial losses in payments for mail carriage, if provisions of the 1916 law were enforced.

"FAVORABLE ACTION is necessary if the Railway Express Agency is to survive as a private enterprise," Senator Johnston (D.-S.C.) told the Senate in reporting the unanimous action of the Committee on Post Office and Civil Service. "The committee is in agreement that survival of REA is in the public interest," Senator Johnston added.

• **AWO WILL PROTEST GRAIN RATE REDUCTIONS** filed by the Southern to become effective Aug. 10 (RA, July 10, p. 56). The new rates, designed by Southern to recapture feed grain traffic now moving by unregulated carriers, are volume rates based on the economies made possible by higher payloads and higher minimums in Southern's new lightweight alumninum cars, plus multiple car movements, according to D. W. Brosnan, the road's executive vice president. The rate reductions—such as a new rate of $3.79 per net ton for an 1,800-ton lot from St. Louis to Gainesville, Ga., as compared to the former rate of $10.50 a net ton—will, if permitted to go into effect, "drive the water carriers out of this transportation field," an American Waterways Operators' announcement of their planned protest stated.

• **GROSS NATIONAL PRODUCT** in the second quarter of 1961 was up $14 billion over the first quarter, for a total GNP of $515 billion, President Kennedy told his press conference last week. The increase reversed three consecutive quarters of decline in GNP, the President noted.

• **PENNSYLVANIA** had one of the lowest passenger-service operating ratios of all Class I railroads last year—105.82. The Pittsburgh & Lake Erie's 1960 passenger-service operating ratio of 331.64 was erroneously attributed to PRR in this column July 10.

Canadian Roads Schedule Incentive Rates on LCL

Canadian National and Canadian Pacific are applying the incentive rate principle to LCL, under a plan which calls for successively decreasing charges on increasing sizes of shipments. The rates, scheduled to become effective July 31 on LCL in Ontario and Quebec, are designed to provide a more competitive pickup and delivery service between principal points in the central provinces.

The plan will apply to all classes of freight except those not suitable for PU&D (e.g., perishables, explosives, livestock, bulk freight). Rates will be scaled to offer maximum benefits for shipments of 750 pounds and above. As an example, tire cord now moves between Montreal and Kitchener, Ont., at $2.15 per 100 pounds. The new scale will set a rate of $1.99 for shipments between 750 and 2,000 pounds; $1.84 between 2,000 and 5,000 pounds; and $1.73 between 5,000 and 10,000 pounds. Shipments over 10,000 pounds will move on a $1.56-per-hundred rate.

Application of a mixing rule is also designed to encourage larger shipments, by enabling a shipper to benefit from a lower rate on a combined consignment of assorted commodities (which, if individually shipped, would be subject to higher rates). Under the mixing rule, each commodity in a combined shipment will be rated as if it were being shipped at the total weight of the mixed consignment.

Eastern Roads Slash Rates On Printing and Writing Inks

Eastern railroads have published substantially reduced box-car and tank-car rates on printing and writing inks in Official Territory. The new rates became effective June 10.

The box-car-rate adjustments provide for substantial reductions from the former class rates at 30,000 lb and even lower rates for shipments in excess of 30,000 lb. For example, at 600 miles a 30,000-lb shipment formerly cost 125 cents, 135 cents, or 143 cents per cwt (depending upon class). The new rate at 600 miles is 96 cents per cwt on a 30,000-lb minium and 73 cents per cwt on a 60,000-lb shipment.

The new tank-car rates also promise substantial reductions to shippers. At 1,000 miles a 6,000-gal. tank-car shipment formerly cost 294 cents per cwt. The new tank-car rates at 1,000 miles are 169 cents per cwt on a 6,000-gal. shipment and 165 cents per cwt on shipments in tank cars of 8,000-gal. capacity or more.

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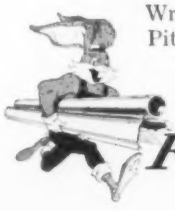

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- will carry auto racks.
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RAILROADING AFTER HOURS WITH JIM LYNE

COST FINDING GUIDE—By far the most enlightening survey of the history and practice of cost finding, especially for railways, that I've seen so far, is a big fat mimeographed volume labeled "Study of Cost Structures and Cost Finding Procedures in the Regulated Transportation Industries." It is a report prepared over a year ago by R. L. Banks & Associates of 1001 Fifteenth Street, N.W., Washington, D.C., for the Commerce Department.

The discussion covers cost finding procedures, not only for railroads, but also for trucks, pipelines, barges and air transport. It is written in understandable English, and makes definite recommendations for a sensible program of cost analysis for the several forms of transportation.

Unfortunately, the report is not for sale; and Bob Banks advises that the limited supply of copies he has is almost exhausted.

WOOD LOCO FUEL?—The Banks report presents an irrefutable mass of evidence against setting the floor under competitive rates at "fully distributed costs." It is "marginal cost" that must be the guide, if the public interest is to be protected. Water and motor carriers, please note.

Incidentally, the Banks group believes reports to the ICC should "reflect modern conditions." It observes that railroads are still obligated to report the number of cords of wood (hard or soft), consumed as locomotive fuel. And how much kerosene in locomotive headlights, maybe?

Mr. Railroader:

DO YOU KNOW THE REAL COST OF DO-IT-YOURSELF ELECTRICAL ENGINEERING AND CONSTRUCTION?

Analyze such expenditures and compare them with the low-cost of using the services of Specialists experienced in Railroad Electrical Engineering and Construction.

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SLOGAN FOR RAILROADS?—At the time of the signing of the Declaration of Independence, Benjamin Franklin observed: "We must indeed all hang together or, most assuredly, we shall all hang separately." The revolutionists hung together and, as a consequence, avoided individualized suspension. Something for railroaders (including unionists), to ponder in A.D. 1961, it strikes me.

BEECHING'S PILLS—Dr. Richard Beeching, the chemical manufacturer who now heads the British railways, does not seem to have fallen into a bed of roses. Chairman Ed Hill of the Eastern Railroads Traffic Association has just returned from Britain and has handed me a sheaf of clippings from British papers, indicating that the good doctor has got his hands full, in his assignment to eradicate the red ink.

He has prescribed such standard medicine as eliminating thin-traffic branch lines, raising rates (including commuter fares) and reducing forces. The sensational press is trying to make something of Dr. Beeching's own salary—which is generous by British standards ($67,000), but is exactly what he was getting in the industry job he was induced to leave to take on his railway assignment.

WHAT'S TRANSIT FOR?—My faithful informant from the Boston area — Southworth Lancaster—has sent me a clipping from that city's "Herald" in which Mr. L. raises the question of what the purpose of the local transit operation is.

Is it the function of such an operation to earn money (or, at least, minimize its losses)—or is its assignment that of attracting commuters from the highways in sufficient numbers to minimize the construction and maintenance cost of highways?

If a municipal area loses $1,000,000 on a transit operation and thereby saves $5,000,000 in highway costs—is that good business for it or not?

The government could use some figures, showing how much highway expense is saved every time a trainload of piggybacked trailers takes 200 trailers and tractors off of the highways (to say nothing of the saving in time to other highway users).

MORE ON SF CHECKS—Santa Fe's Bill Burk tells us there are some 20 banks in the road's territory that print blank checks with the Santa Fe's emblem on them (as do the Amarillo banks I mentioned here July 17). The railroad supplies printing plates to the banks that will use them—and receivers of the checks cannot avoid knowing it's Santa Fe payroll money that's coming their way.

BIGGEST 'HOUSE ORGAN'?—The monthly magazine of the National Railways of Mexico, "Revista Ferronales," celebrated its thirty-first birthday with its June 1961 issue. The Revista Ferronales replaced an earlier, and less ambitious, magazine called "Express," dating back to 1910.

The Revista is the largest of any of the individual-company railway magazines that I see regularly. It makes extensive use of color and illustrations, both photographs and drawings. Its size is 8¾ in. by 11¾ in. and the June issue contains 140 pages. It reports not only on railroad matters but also on a wide range of subjects designed to interest the employee and his family.

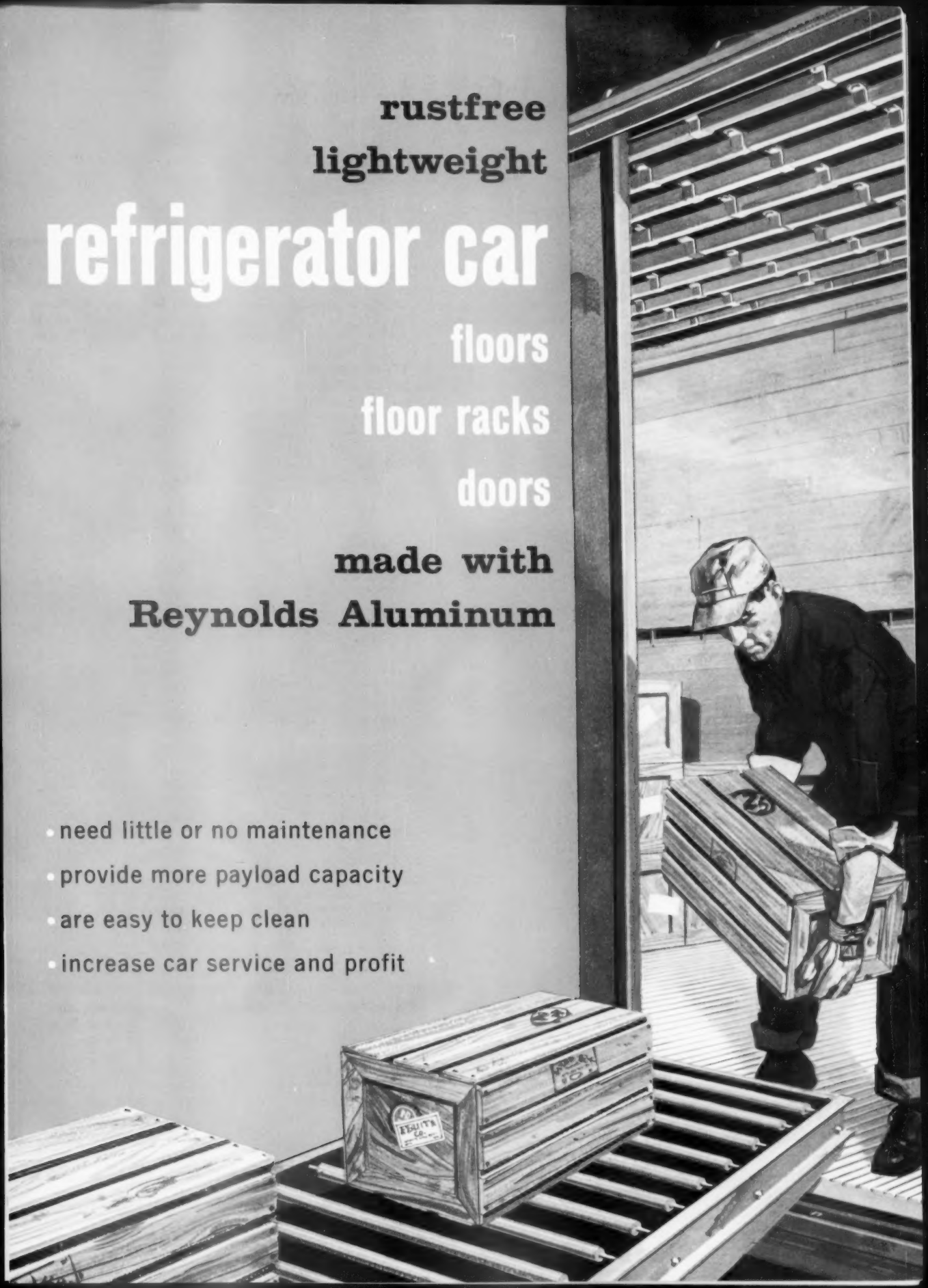
rustfree
lightweight

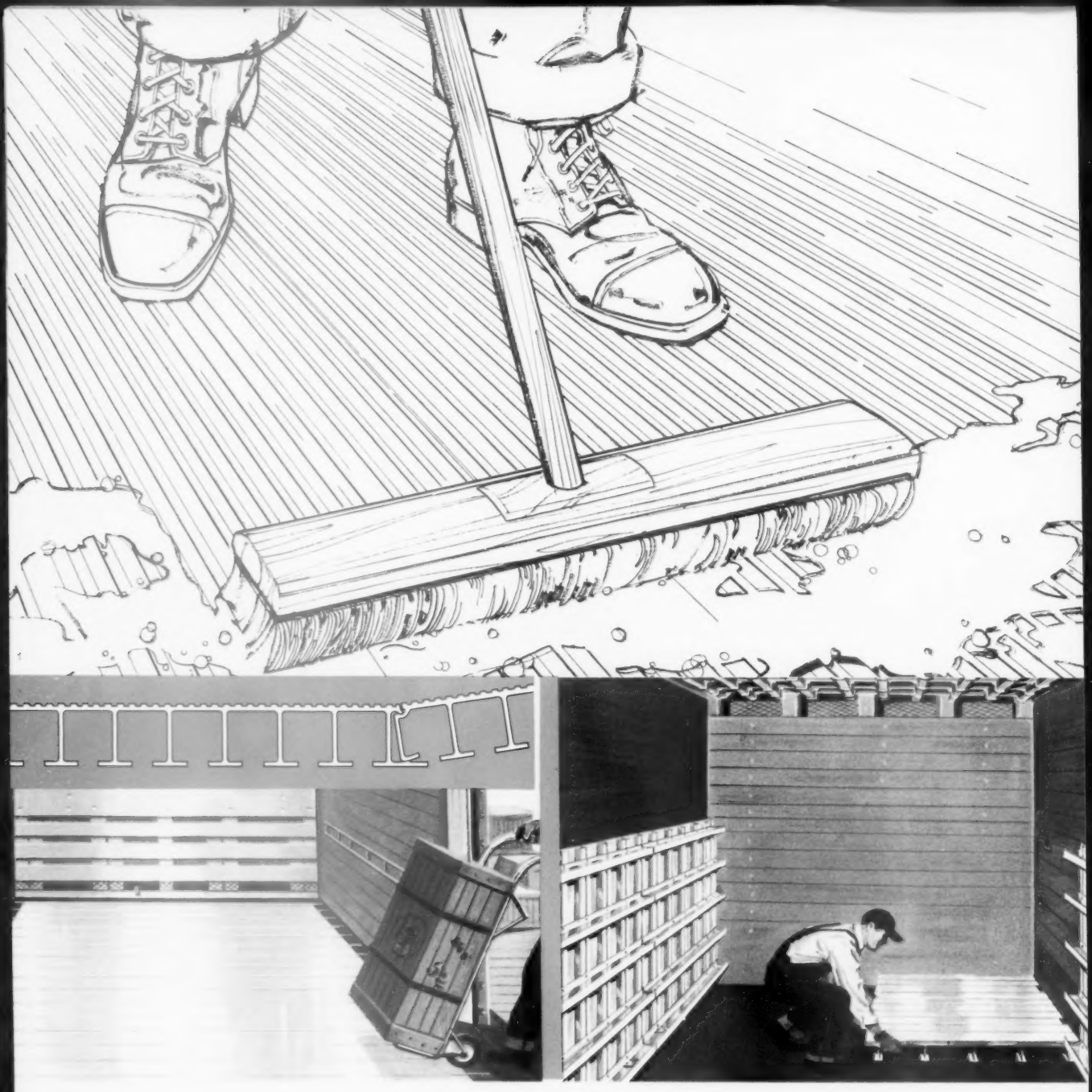
refrigerator car

floors
floor racks
doors

made with
Reynolds Aluminum

- need little or no maintenance
- provide more payload capacity
- are easy to keep clean
- increase car service and profit



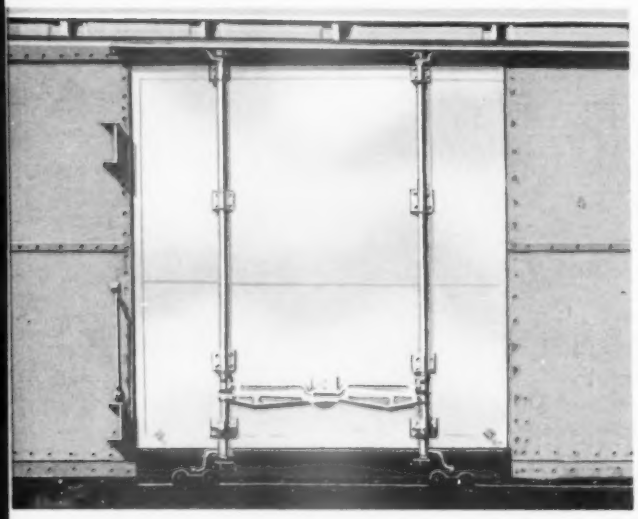


Flooring made with rugged, lightweight Reynolds Aluminum will *last as long as the car*. Wood floors are normally replaced during the life of the car, but an aluminum floor never needs replacement, outlasting several wood installations. Maintenance is much lower with aluminum. It won't rust, rot, or soak up moisture. It won't splinter or warp. And, with the Reynolds interlocking extrusion design, the floor is water-tight, so insulation stays dry, serves longer. Flooring made with aluminum won't absorb odors, is easy to keep clean, and is *strong*, resisting wear, corrosion and damage. Down time is reduced because aluminum flooring needs so little attention, never needs "drying out."

Floor Racks of Reynolds Aluminum eliminate just about all the long-range service and cost problems of racks made with other materials. Aluminum racks won't absorb moisture or grease; they won't splinter or rot. They resist rust and corrosion, need no protective coatings. Aluminum floor racks are rugged, too, and can take a lot of punishment from fork lift truck wheels and cargo containers. And, strong as they are, floor racks of Reynolds Aluminum are light in weight. They're easy to install and remove from a car, and they cut car dead weight to increase freight capacity. Aluminum floor racks quickly return their slightly higher initial cost—in lower maintenance and longer service.

refrigerator car components

made with Reynolds Aluminum reduce maintenance and replacement costs



Doors made with Reynolds Aluminum are operated easily by one man, without "crowbar" tactics. They're light in weight, weighing as little as 740 lbs., compared to over 1,000 lbs. for steel doors. Maintenance is lower with aluminum doors; they never need protective painting; they resist corrosion; they won't rust. Tested in daily rail service, doors of rugged Reynolds Aluminum take the toughest freight duty.

DEAD WEIGHT SAVINGS POSSIBLE WITH ALUMINUM COMPONENTS

Component	Weight Aluminum	Weight Steel or Wood
Flooring—40 ft. car	1,278 lbs.	1,900 lbs. (wood)
Floor racks—40 ft. car	1,040 lbs.	3,000-4,000 lbs. (steel)
Door—8 ft.	740 lbs.	1,090 lbs. (steel)

There's more *profit* in a refrigerator car—for both the shipper and the owner—when that car has doors, floors, or floor racks made with Reynolds Aluminum. That's because this strong, lightweight, rustfree metal is one material that can guard freight quality and cut costs at the same time.

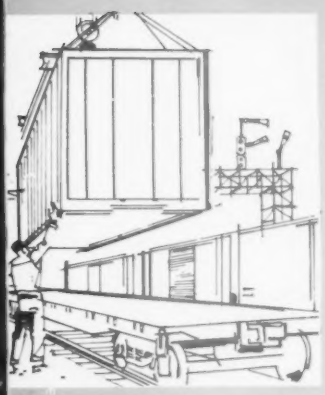
Cargo is better-protected from damage and spoilage because aluminum is strong and rustfree, and will not soak up odors and moisture. Refrigerator cars with aluminum components are easy to maintain, easy to keep "surgically clean."

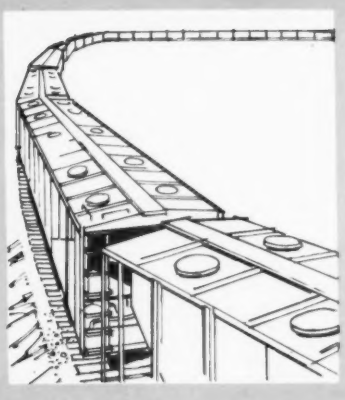
The owner profits, too, because aluminum car components stand up better in service, and serve longer. Pound for pound, aluminum is stronger than steel, although it weighs just one-third as much. At the end of their long service, aluminum components retain a high scrap value to return an important part of the owner's investment.

Light weight . . . strength . . . durability . . . low maintenance . . . that's what makes refrigerator cars with components of Reynolds Aluminum high-payload, high-profit cars.

Write for details on equipment made with Reynolds Aluminum . . . see next page

Reynolds
...knows aluminum
...knows aluminum for railroads





The aluminum refrigerator car components described on the previous pages were not born overnight. They are the results of many years of intensive development work by Reynolds engineers teamed with top railroad equipment manufacturers, shippers, and operators.

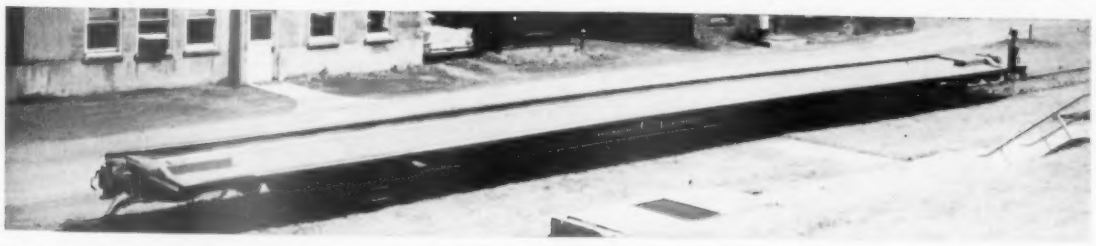
This teamwork between the rail industry and Reynolds aims at these goals: to develop aluminum products that will reduce operating and maintenance costs . . . to do a better job for shippers . . . and to increase revenue and return for operators.

Refrigerator car components are just one result of that work. Reynolds Aluminum is improving service and cutting costs in other rail equipment, as well: box car doors, inner-liners, and roofs, bridge plates, crossmembers, containers, electrical equipment and conductors, signs, chain link fencing, and utility buildings.

For specialized technical help from the people who know aluminum for railroad applications, contact your local Reynolds office. Or write *Reynolds Metals Company, P.O. Box 2346-TM, Richmond 18, Virginia.*

REYNOLDS ALUMINUM

Watch Reynolds TV Show "Harrigan & Son", Fridays—ABC-TV



From Pullman-Standard: Longer, Lower Flat Car for Auto Service

Pullman-Standard's 89-ft flat car is an adaptation of the P-S Lo-Dek car introduced in June 1960 (RA, May 30, 1960, p. 64.) It is said to be the longest and lowest flat car ever built to carry auto racks. The car is 2 ft longer and 11 in. lower than conventional flat cars, and specially designed to carry 12 standard or 15 compact automobiles. The increased length of the car gives the racks more clearance on curves and the rack manufacturers more leeway to meet changes in automobile design. Of the 221 cars on order, 127 for Trailer Train will be pooled and 94 for the NITX division of North American Car will be leased to Milwaukee and NYC.

ICC Approves PU&D Charges in East

Division 2 of the ICC last week in its report and order in I&S Docket 7505 found that schedules proposed by several eastern railroads for establishing charges for pickup and delivery service on less-than-carload and any-quantity shipments at various points in eastern territory were just and reasonable.

B&O, C&O, E-L, NYC, PRR, Wabash, Nickel Plate and other carriers had filed schedules to become effective Dec. 23, 1960, canceling provisions for free pickup and delivery service for LCL and any-quantity shipments at numerous points in eastern territory and establishing for such service charges ranging from 20 to 60 cents. At the same time, Jersey Central, Lehigh Valley and Reading proposed increases in their charges for this service in amounts ranging from 5 to 49.5 cents. Following protests by various shippers and shipper organizations, the operation of the proposed schedules was suspended to July 22, 1961.

Prior to the proposed schedules, Division 2 found, most of the Class I railroads in eastern territory provided pickup or delivery without additional charges, subject to a minimum rate provision. Some rail carriers provided the service at charges ranging from 10 cents to $1.75. Other carriers did not perform any pickup or delivery service, either free or at an added charge.

The proposed charges, the report said, are based on and reflect the appropriate amounts presently paid by the railroads to local draymen for performing the service under contractual arrangements. The proposed charges vary at different places, the report noted, being generally substantially higher at larger cities than at smaller cities and towns. They do not vary as to commodity, size of shipment, distance involved, or length of line-haul movement.

"The proposed schedules do not apply at all points served by the respondents," the report noted. NYC, for example, proposes charges at certain stations but will retain free pickup and delivery at non-centralized stations where it is engaged in a program of serving these points by truck from larger centralized stations. C&O proposes charges only at certain points served in common with the NYC. PRR does not propose charges at local points where there is no local handling from or to the freight house and the service is performed in substituted line-haul trucks. WM proposes no charges at stations where substituted service is performed. Wabash proposes to retain free pickup and delivery service where the origin or destination is not in eastern territory. Nickel Plate does not propose an additional charge at common points with carriers that are providing the service without charge.

"The purpose of the proposal," the report stated, "is to obtain an estimated $7 million additional income. There is no real dispute that respondents are in serious need of added revenue. . . . The facts of the record also clearly show that respondents are incurring a huge deficit in the transportation of less-than-carload traffic." LCL deficits, the report said, ranged "from $14.6 million in 1958 to $27.4 million in 1959."

"We are not convinced," the report stated, "that the increased or added charges will cause any large-scale diversion of traffic or result in a net-revenue loss to respondents. On the contrary, we are satisfied that the proposal will result in a substantial net revenue gain to them."

The report noted that LCL deficits have inspired numerous studies and numerous proposed solutions; among them, a suggestion by shippers that railroads offer better service at lower rates. "Better service at lower rates is the end result to be achieved," the report commented. "It does not of itself appear to be a solution."

Other suggestions mentioned, the report said, called for keeping freight and transfer houses open more hours and days, better advertised train service and definitely scheduled loading and unloading periods, more through or pool cars, more joint rates and through service on a railroad "system" basis, greater use of trucks in connection with train service or for inter-terminal transfers, use of TOFC for LCL, joint rates and through rates with independent motor carriers, and establishment of a "one-agency" plan to handle LCL and related traffic.

"We take no position at this time," Division 2 said, "as to the merits of any suggested plans. The problem extends beyond the scope of this proceeding, but the pressing need for a solution is pointed up by the issues here. . . . We do not believe that another formal investigation by the Commission is now called for, but we do suggest, in fact we urge, that the railroads seek the cooperation of all interested parties in a conscientious effort to diagnose the problem and find a remedy. We believe that this is a matter for organized but informal action at this time, and we stand ready to cooperate in any appropriate manner."

Report from Europe: K-M Tests

When news broke late in 1959 that West Germany's Krauss-Maffei was to deliver six 4,000-hp diesel-hydraulics to two U.S. roads, there were raised eyebrows in U.S. rail circles. Against this background, German Federal Railway's Dr. Gunther Wiens had an interested audience at last year's San Francisco Mechanical Section meetings when he discussed diesel-hydraulic motive power.

Early this month, K-M took one of the new units to Austria's Semmering Pass for its first public demonstration runs. When the locomotive had been put through its paces, the questions "What will it do?" and "How does it work?" had at least some preliminary answers. Here's a full account of the demonstrations.

"During the tests the locomotives have performed just as we expected them to; what we need now is experience." The comment, by Southern Pacific Vice President W. D. Lamprecht, essentially summed up official reaction of SP and Denver & Rio Grande Western observers to the July 3-7 tests of Krauss-Maffei's 4,000-hp diesel-hydraulic road locomotive on Austria's rugged Semmering Pass.

Apart from the official observations, there was plenty of indication that the hefty locomotives will live up to the reputation of their German predecessors in the diesel-hydraulic field. The SP and D&RGW have each ordered three of the locomotives (RA, June 20, 1960, p. 14).

During the tests, the big red-and-gray C-C locomotive, fourth off the line and first of the SP's three units, made five round trips over the Semmering's 2.5% grades. It hauled scheduled freight trains of the Austrian Federal Railways while U.S. and foreign observers packed the cab, the engine room, and the attached dynamometer car, watching the locomotive run through its paces. The performance was impressive.

The Semmering itself is as close to conditions under which the locomotives will operate in the U.S. as it's possible to find in Europe. With a ruling grade of 2.52% boosted to the equivalent of 2.7% by sharp, uncompensated curves, the 19-mile north ramp was the main testing ground for both pulling and braking power.

Trains hauled in each of the ten tests (five in each direction) averaged about 950 U.S. tons. They ranged from 70 to 90 axles (following European practice) almost entirely composed of two-axle cars. Differences in car design—fewer tons per axle, side buffers, longer rigid wheelbase and the almost universal use of roller bearings—make exact comparison with U.S. trains difficult where actual running resistance is concerned. But Krauss-Maffei's engineers calculate a running resistance somewhat higher than an equivalent tonnage in U.S. bogie cars.

Performance was further affected by the restrictions of Austrian axle-loading limitations. The locomotives—with a design weight in working order of 165 U.S. tons—were held down to 152 tons, carrying only about 660 gallons of fuel (compared with a tank capacity of 3,280).

Within these limitations, K-M's advance calculation of expected performance gave an estimated speed of 14 mph for the most difficult section of the line with a train of 965 U.S. tons. Actual performance either held the line or exceeded it, the locomotive holding a speed of 16-20 mph over the toughest section from Payerbach-Reichenau to Semmering.

The only slippage occurred on wet track after a night of rain. SP and Rio Grande observers later commented that the slippage, even under these conditions, and with the automatic sanders disconnected, was not severe enough to be important.

Especially impressive was the comparison with normal motive-power practice on the Semmering. The K-M locomotive, with a horsepower of just over 3,000 at the transmission output shafts, held almost exactly to scheduled times with trains normally handled by two electrics—a C-C and a B-B—with ten axles and a total output of 8,600 hp at the axles.

Even more closely watched than the pulling power was the performance of the Voith hydrodynamic braking system, said to be the first dynamic brake ever applied to a diesel-hydraulic. Dynamic braking held the train to the prescribed 30 to 35 km/h [18-22 mph] limits consistently on the steepest downgrades. The Westinghouse air brakes were used only for full stopping and with light applications at two or three spots where track maintenance imposed slow orders.

Prime movers for the locomotive are two Maybach MD 870 16-cylinder engines of the firm's "tunnel" design—disc-shaped crank webs each carrying SKF cylindrical main roller bearings whose outer races are mounted on the annular crankcase walls.

Each V-16 4-cyle engine is pressure-charged and equipped with intercooling for maximum output at 1,500 rpm. The engines have a continuous rating of 2,000 hp at 1,585 rpm under standard International Railway Union (UIC) conditions (atmospheric pressure 14.23 psi at 68° F). Rated power for site conditions at Semmering was 1,900 hp gross, with an input to the hydraulic transmission of 1,770 hp.

The engines weigh 14,200 lb each

U.S. SUPPLIERS OF EQUIPMENT

Air brakes, 26L	Westinghouse Air Brake Co.
Bells	Magnus Metals Corp.
Couplers and draft gears	National Castings Co.
Headlights	Pyle National Co.
Jumpers and receptacles	Joy Manufacturing Co.
Level gages, fuel tank	The Liquidometer Corp.
Recorders, speed	Barco Manufacturing Co.
	Chicago Pneumatic Tool Co.
Sanders	Prime Manufacturing Co.
Whistles	Nathan Manufacturing Div., Wegner Machinery Corp.

Hydraulics for SP and D&RGW

SIX 4,000-hp Krauss-Maffei diesel-hydraulic road locomotives will be delivered to the United States this year.

and have the same bore and stroke—7.3 in. by 7.9 in.—as other Maybach MD engines. Pistons are of the divided type and are pressure-oil-cooled through telescoping piping within the engine, with a special heat exchanger provided for the piston-cooling oil.

The builder claims the oil-cooling of the pistons permits the reduction of piston clearance during installation, resulting in a reduced rate of wear, and cities a liner wear rate of only .006 mm (approximately .00025 in.) per 1,000 operating hours observed in German Transport Ministry tests.

Engines are started electrically by a starter-generator attached to each Voith transmission, driving through an elastic coupling and gear step to the transmission input shaft and thus to the engine. Each engine has its own radiator group, consisting of a V-shaped radiator bank through which air is pulled from side louvers and exhausted through the roof.

The three fans for each radiator are hydrostatically driven by multi-piston oil pumps and oil motors connected to the fans by V-belts. Pressure in the hydrostatic line (and thus fan speed) is controlled by the temperature of the cooling water, through a thermostat and bypass.

The main cooling-water circuit runs through the radiator, the engine block and the heat exchangers serving the transmission, hydrodynamic brake and engine lubricating oil. A secondary circuit serves the intercooler for the charging air exclusively.

To improve cooling in tunnels where available air has been heated by exhaust gases, each radiator is fitted with a water-spray system which sprays the entire cooling surface. Combustion air for the engines passes over plate-type and oil-bath filters through openings in the side walls. Each engine has an oil-fired preheater which works through the cooling-water system.

Heart of the locomotive is the hydraulic transmission. The 4,000-hp unit uses a fully hydrodynamic drive, the Voith Turbo Transmission type L8-30rU, with three Föttinger-type torque converters, built-in reversing gear and attached hydrodynamic brake, one transmission for each engine and truck. Each of the three converters, consisting of the driving pump impeller, driven turbine runner and a fixed stator or guide ring, has blading designed for a different speed-torque range. This differs from previous Voith transmissions, in which the medium- and high-speed converters were identical, the third stage driving the output shaft through step-up gearing.

Changes of operating range are carried out hydraulically through an automatic control system which fills the appropriate converter in response to track speed and engine rpm. The emptying and filling of the converters is overlapped during changeover to eliminate power loss; during the Semmering tests changeover could be spotted on the recording instruments in the dynamo-

meter car, but was virtually impossible to sense otherwise.

In the informal discussions following each day's tests attention turned on several occasions to the relative merits of the Voith all-hydraulic transmission and the Maybach-built Mekydro transmission, which uses a single, permanently-filled converter with an automatic mechanical gearbox. Both have their supporters: Both Mekydro and Voith transmissions are used by the German Federal in the 2,200-hp V-200 road locomotive.

Since full interchangeability was a design requirement, it is not unusual to find a V-200 operating with one transmission of each type in service. Mekydro drives were used in both of the K-M locomotives whose development led to the 4,000-hp units, the 2,200-hp C-C units built for Yugoslavia, and K-M's own 3,000-hp C-C demonstrator. They were also used in the Baldwin-built locomotives for the New York Central and New Haven "Train X" lightweights.

Voith drives, on the other hand, have been specified not only for the U.S.-destined 4,000-hp locomotives but also for three 2,700-hp center-cab C-C locomotives being built for Turkey.

It was hard to find agreement on the subject, but the feeling among U.S. observers seemed to be that the Voith, though perhaps slightly less efficient, would present fewer maintenance problems. The Voith hydrodynamic brakes, designed to be used with Voith transmissions, were another factor, though Maybach is reported to have its own dynamic brake design.

Braking System

The braking system, which attracted much attention during the tests, is based on the principle of the Froude "water brake," in which energy is dissipated in the form of eddy formation and heat. The brake itself consists of a double-entry rotor, attached directly to the output shaft of the Voith drive transmission, and a fixed stator with two bladings to match the double-entry rotor. Braking is controlled by the filling and emptying of the hydraulic circuit.

Eight braking steps—corresponding to different fillings of the circuit—are available. Oil is fed to the brake by the main transmission filling pump through the open duplex non-return valve, the heat exchanger, and the braking valve. Once filled, the duplex valve closes and the oil circulates in a brake-exchanger-brake circuit. Heat generated during braking is dissipated through the heat-exchanger to the engine cooling-water circuit and thence through the main radiators, which otherwise provide cooling for both engine and transmission oil. During braking, the engine, which has a normal idling speed of 600 rpm, automatically steps up to 900 rpm to provide increased ventilation and circulation in the cooling circuits.

Regulation of the brake filling is carried out through an eight-step valve which varies the cross-sectional areas of the brake's inlet and outlet, forming a shunt circuit; the brake-control valve is operated by the main throttle handle. Since heat dissipation and torque considerations place a well-defined limit on the amount of energy the brake can absorb, a filling-limit valve keeps the filling of the brake within set limits. In addition it serves as a relief valve, allowing surplus oil to escape when oil pressure within the brake reaches a preset maximum.

From each transmission, power is taken to an intermediate gear built by K-M and attached to the truck frame, consisting of a spur-gear pair with a one-sided top input and bilateral take-off underneath. Final drive is through Maybach type C 33 vI bevel-gear and spur-gear axle drives. Between components, power is transmitted by universal-jointed Cardan shafts. Except for needle bearings in the Cardan shafts, all bearings in the motor and drive train are SKF cylindrical roller units. The bearings are all standard SKF catalog items available in the U.S. Most are interchangeable with standard bearings of other makes.

The trucks are of a special design which is made necessary by the Cardan-shaft drive. A lever and rod system attached partly to the bogie frame and partly to the main frame extension replaces a center pivot, guiding the truck frame around its theoretical center. Of

Diesel-Hydraulics: How Will They Affect U. S. Railroading?

In the back of every U.S. observer's mind at the Semmering tests described on these pages was the same question: What effect are the Krauss-Maffei diesel-hydraulic locomotives apt to have on U.S. railroading, and on the U.S. locomotive industry?

When the six units ordered by two U.S. railroads are unloaded at Houston's waterfront later this year, will they mark the beginning of a motive-power revaluation for U.S. roads? Or will they disappear into the limbo of forgotten experiments?

Odds against a motive-power revolution are heavy. A U.S. railroad industry almost totally given over to the diesel-electric would not be the most receptive market, even if it were financially healthier than it is. Upgrading programs and trade-in allowances mean money in the bank for the road with a big investment in EMD's or Alcos.

W. D. Lamprecht, of the Southern Pacific, puts it in terms of alternatives:

With a large part of the diesel fleet coming up for renewal, the choices are to rebuild in the road's own shops, send power back to the plant for upgrading, trade in on new power, or scrap and buy new. "We've tried them all, and we haven't made up our minds."

In some ways, however, the diesel-hydraulics face a better prospect than would diesel-electrics from a new manufacturer. Here, the choice is between two radically different types of diesel power, rather than simply between basically similar units from different manufacturers. If the six 4,000-hp units live up to their promise, and non-operating considerations permit, they could well pave the way for further hydraulics, at least in certain applications.

There seems to be little chance, on the other hand, that the imports will come to an ignominious end, hidden away behind the backshops for mechanical reasons. The diesel-hydraulic has an impressive record in Europe and elsewhere in the world. Krauss-Maffei, Maybach and Voith are all respected names in world railroading, with an enviable record.

In fact, of all the free world's diesel hydraulics with an output of over 2,000 hp, nearly 99% are either K-M-built or built to K-M designs—and the hydraulics' share of the world's total diesel units has risen from 4 to 17% in the last ten years. If the SP and Rio Grande units are the last of their kind in the U.S.A., it is more than likely that it will be because of factors other than their engineering and capabilities.

There is, of course, a public-relations aspect to the matter, and it cuts

all-welded block-type construction, the truck assembly incorporates elastic Silentbloc joints wherever possible, not only cushioning shocks but reducing maintenance. Longitudinal pulling and brake forces are transmitted from the truck to the main frame by manganese hard steel liners.

Vertical loads are carried in two steps. The main frame rests, through rubber bolsters, on four cross members which are suspended in turn from the cantilevers of the truck frame by spring tensioning screws and helical springs. The truck suspension is relatively soft, while the direct springing between axleboxes and truck frames has a higher rigidity. The design of the springing is intended to prevent excess rolling.

A main point of departure from usual European diesel practice is the heavy mainframe of the 4,000-hp locomotive. Previous designs have used the body shell as a structural element, and main frames are normally designed to withstand buffing forces of no more than 220 U.S. tons (200 metric tons). Specifications for the SP and Rio Grande units, however, called for a million-pound buffing strength at the drawbars. The result is an electrically-welded frame consisting of two continuous wide-flanged I-beams connected at the bolsters and under the engines by heavy built-up crossbearers. End members are cast-steel pieces incorporating coupler pockets.

A finished frame was subjected to the specified 500-ton compressive force at the coupler pockets. In spite of distortion of several inches at the frame center, lasting distortion was less than 1/64 in.

The frames carry AAR type E bottom-operated couplers with type M-380 draft gear. For testing in Europe special built-up T-shape drawbars were fitted, with solid unsprung side buffers and center drawhook.

Superstructure

The superstructure is a U.S.-European hybrid in style, the U.S. features being in some ways a blend of Alco and Electro-Motive stylings. Most obvious European feature is the pronounced inward slope of the upper portion of the cab and body sides, made necessary by the need to perform tests under European clearance conditions. This feature of the design provoked some criticism by U.S. operating men during the tests.

The locomotive features a broken roof line, the engine-room roof being slightly lower than the cab roof. The chief reason for this was to provide extra space for exhaust stacks, allowing a lower temperature of the air taken in for cooling and combustion under close tunnel conditions. Small rear windows have been provided in the cab, permitting easy observation of exhaust gasses.

The superstructure consists of four separate sections: nose, cab and two engine-room sections. Nose and engine-room sections are solidly bolted to the frame, while the cab rests on rubber cones.

The four sections are insulated and weatherproofed by rubber profiles fitted at the joints. All four sections consist of formed sectional steel framing onto which the outer walls are spot-welded. The inner sides of the engine-room walls are covered with sprayed-on acoustical material. The cab is double-walled, the space between outer walls and perforated inner metal sheeting being filled with stone wool. This acoustical treatment, combined with the rubber-cushioned mounting, results in an unusually quiet cab interior.

Roof hatches are provided for removal of the engines, front starter-generator, and the Cardan shaft passing under the cab floor. The two complete cooler plants in the engine-room roof are removable as units. The rear hydraulic transmission can be removed through the opening resulting from removal of the rear cooling plant. The nose section must be removed to remove the forward transmission.

The "amenities" furnished for the crew are luxurious by European standards, but normal for modern U.S. motive power; comfortably-upholstered adjustable seats for engineer, fireman and head brakeman (neither fireman nor head brakeman was in evidence in Austria—presumably these refinements will be added only after the units reach their destination); cab heating

both ways: the road that experiments wisely with new ideas can earn itself a "progressive" label that is bound to have some effect on its public. At the same time, as one U.S. railroader observed, "Can't you just imagine what people would say, especially right now, if we were to start buying overseas in any great quantity?"

And finally, what about the effect on the American locomotive industry?

There was no missing the fact at Semmering that Krauss-Maffei regards the U.S. order as a feather in its corporate cap. And well it might, since the order represents the first time a U.S. road has gone overseas for a complete locomotive in more than half a century—in fact, since the Pennsylvania tested a French-built de Glehn compound in 1904.

Certainly, U.S. builders will watch the hydraulics' U.S. performance closely. One builder, Alco, had an observer at the Semmering tests, and there were persistent after-dinner rumors of a U.S.-built diesel-hydraulic road unit under development. Certainly, continued imports of foreign-built diesels would be unlikely to find a favorable response in an industry which order-booked only 181 units last year—many of them replacements on a trade-in basis.

Should the demand for hydraulics reach any sizeable proportions, it seems logical to expect either a home-built design or—more likely—a licensing agreement. Krauss-Maffei hopes, of course, to book further U.S. orders for itself on the strength of these first six units. But K-M has already licensed the production of units to its designs in Britain, and company officials openly imply that licensing arrangements would be necessary if the U.S. is to become an important market.

Clearly, the Krauss-Maffei units have produced more questions than they have, so far, answered. It will inevitably be some time before the final verdict is in—and not all the answers will be dictated by operating and engineering considerations. However strange they may be to American rails, the locomotives are clearly not freaks. They are the logical development of proved design and performance, engineered and constructed by the most experienced builder in the high-horsepower diesel-hydraulic field. What works in Europe may not, of course, suit U.S. considerations; that is the crucial question now.

One thing is certain: the six units will get plenty of attention when they start handling tonnage over the Rockies and the Sierra Nevadas. From the account they've so far given of themselves, they deserve every bit of open-minded attention they get.

and ventilation equipment; drinking-water cooler and flush toilet.

The locomotive is equipped with a Westinghouse 26L air brake system, supplied by a three-cylinder 3CDCB compressor driven by each engine on the end opposite the drive output through V-belts. With an output of 225 cu. ft./min. each at 1,000 rpm, the compressors feed the two main air reservoirs, which have a total capacity of 48,820 cu. in. The air system also supplies the pneumatic control equipment and various air-operated auxiliary equipment. All wheels are fitted with clasp brakes, with individual cylinders for each wheel. A hand brake on the rear cab wall acts on one wheel of the front bogie only.

Two 64-volt lead batteries are provided, each with a 385-ampere-hour capacity. They supply control circuits, lighting, and auxiliaries, as well as providing starting power. In operation they are continually charged by the starter-generators.

Four sandboxes, welded to the inner engine-room walls and filled through outside hatches, supply sanders discharging under the leading wheels of each truck. The sanders are interconnected with the wheel-slip-prevention equipment to provide automatic sanding as soon as slippage begins. (On the only occasion during the tests when noticeable wheel-slip occurred, the automatic sanding circuit was disconnected.)

Cab controls are simple and generally convenient. A panel directly ahead of the engineer contains the pressure gages for braking and control, as well as warning lamps and electrical switches. To the engineer's left is a Barco recording speed indicator (during the tests kilometer speeds were pencilled in outside the mph markings for the Austrian engineers) located directly ahead of the master controller. The brake column is on the right, and the master controller and reverse lever with telltale lights at the engineer's left hand.

The master controller regulates both drive and braking. The drive side of the controller consists of 17 steps. At step 1 ("partial filling") the first stages of the converters are partially filled, permitting slow and carefully-controlled movements when operating light. At step 2 the starting converters are filled to normal level ready for operation, while the engine continues to idle at 600 rpm. Steps 3 through 17 provide graduated control of engine output up to full power. Transition between converter stages, as already mentioned, is fully automatic depending on controller position (engine speed) and track speed.

On the opposite side of the controller from the drive steps are eight steps for control of the hydrodynamic brakes. The layout of the controller calibration plate came in for some mild criticism from U.S. motive-power men during the tests. The plate and pointer are so located as to be somewhat hard to read with the engineer in a normal seated position. Some observers felt the provisions of actual notches in the controller would be of value: "If you want to make sure a new locomotive gets a fair chance to show itself, make the engineer as comfortable as possible."

Actual control impulses for the drive, braking and reverse gear are transmitted by a pneumatic control system. The components are on a rack within the nose section. In addition to the direct controls, pneumatic safety circuits are provided, including overload protection which interlocks the engineer controls and air brakes to prevent engines being brought to full output while braking. The reverser is interlocked so that it can be operated only with the locomotive at a standstill. Finally, full electro-pneumatic multiple-unit controls and connections are provided.

How Will They Work Here?

Performance under U.S. conditions is, in the long run, far more important than the actual construction of the units. How will the Krauss-Maffei diesel-hydraulics stack up when put into operation alongside U.S. diesel-electrics?

The answer will probably be given only when the dispatcher on a given division can tell you that—for his purposes—three hydraulics equal X units of another make. Even that will not be the final word. K-M's export manager, asked about a direct comparison, remarks: "If you could take ten diesel-hydraulics and ten diesel-electrics of similar horsepower and weight, designed for the same service, and run them together in pool service on the same trains for about three years, you'd have a reliable answer—and only then."

First of all, what about actual train-hauling performance?

Advance calculations for single-unit performance with a 965-ton train of European cars under Semmering conditions were either met or exceeded during the week-long tests. Calculations based on the same figures have been made for performance of four units with a train of 3,830 U.S. tons. With the same input to transmission for each unit (3,540 hp) the calculated gradient-speed curve for such a train is almost identical to that for the single unit with a lighter train—approximately 1-2 mph higher—from 8 to 30 mph, ranging considerably higher at speeds above 40 mph and with a better starting performance so far as adhesion is concerned.

Further evidence is provided by dynamometer-car tests carried out on the German Federal between Münster and Emden March 17-21 and April 19-28.

During the tests in Germany, maximum starting tractive effort was measured by braking the test train and releasing the locomotive brakes. With locomotive weight reduced to 152 U.S. tons to meet axle-loading restrictions, a maximum starting tractive effort of 106,000 lbs was reached at the 14th power notch. Test time totalled two minutes and 34 seconds. The throttle was advanced from notch to notch only after full engine speed was reached. During the test there was no indication of thermal overloading of the transmission or engine.

Using the accompanying steam locomotives to provide tractive force, the hydrodynamic brake was tested during the same German test series. The resulting braking curve, in accordance with hydrodynamic laws, was a sharp parabola reaching a peak of approximately 47,500 lb at 26 mph. With full braking power, two of the heaviest German steam freight locomotives were unable to accelerate the train beyond 19 mph.

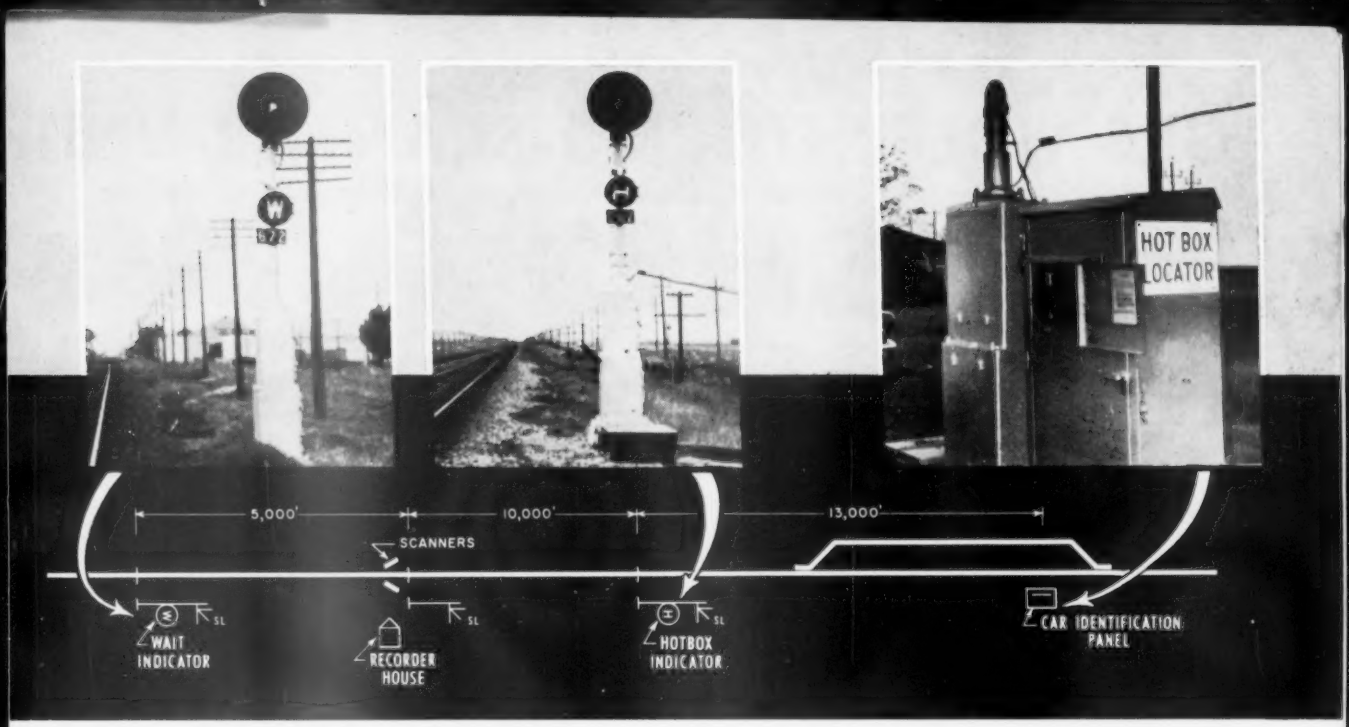
In another test, the train, equivalent to 715 U.S. tons, was slowed from 50 mph almost to standstill in 875 yards with dynamic braking alone.

The tested performance, in short, is impressive. How will the locomotives behave in U.S. operation? How will they compare with existing diesel-electrics?

Southern Pacific observers compare the tonnage handled at Semmering to that normally handled on ruling grades of 2.5% out of Roseville, Calif., by two 1,500-hp road units—but at about two-thirds the speed of the hydraulic. SP's Vice President Lamprecht observed that an SD road-switcher could handle the same tonnage, but at about 5 mph, "And you just can't railroad at that speed any more."

In the many informal discussions following each day's tests, attempts were made to compare the K-M unit's performance with existing U.S. diesels. The usual result of these discussions was to

(*Continued on page 41*)



YELLOW OVER "H" is signal for engineman to stop train at hotbox locator (see 1 below).

How to Tell Crews of Hotboxes

► **The Story at a Glance: While hotbox detector operation has been pretty much standardized, three railroads have each come up with novel approaches for informing train crews when detectors indicate hotboxes.**

- **One road has a completely automatic operation in which signals are set to stop and trainmen read a hotbox locator panel where the engine stops.**
- **A second railroad has an automatic detector which is tied in with a base radio station. When a hotbox is detected, the radio broadcasts the location to the train crew over locomotive and caboose radios. This information is also put on the dispatcher's telephone circuit.**
- **On a third railroad, hotbox detector indications are telemetered to a central office where an attendant observes the pengraph recordings. When a hotbox is indicated, he radios the train crew to tell them its location.**

Here is how one railroad quickly tells crews when trains have hotboxes.

One railroad, with a completely automatic operation, has four hotbox detectors in service. Actuation of the detector lights an indicator signal, the engineman stops the train, and a trainman reads the hotbox locator panel at trackside.

The general arrangement of the equipment is as follows: The scanners are located at a signal in three of the four locations. The recorders, used only as a record and maintenance tool, are always at the same place as the scanners. At a distance of at least maximum train length plus 2,000 ft past the scanner, a "hotbox indicator" is attached to an existing signal. The indicator consists of a glass with the engraved letter "H" in a signal light unit. When a hotbox actuates the detector, the indicator shows a white "H" and the signal displays an "approach" indication. Any intermediate signal between the scanners and the "H" indicator will also display "approach." No "stop" indication is used here or at the hotbox locator panel. The hotbox locator panel is 6,000 to 26,000 ft past the "H" indicator, at or near a siding at a location specified by general order or timetable.

In approach to the scanners, a signal is used to keep a second train from passing the scanners before the first train has passed the hotbox locator panel. This avoids having the first train cancel a hotbox indication that came from the second train. It also keeps a hotbox on the second train from confusing the axle count for the first train.

At two of the locations, in CTC territory, the station-leaving signals are simply prevented from clearing. At the two other locations—one an automatic signal in CTC territory, the other a signal in automatic block signal territory—the signal is prevented from clearing and a "wait" indicator is lighted. The wait indicator is the letter "W" in a unit identical to the "H" indicator. These holdout signals are from 3,400 to 7,200 ft in approach to the scanners, a distance sufficient to enable the train that has stopped at the holdout signal to accelerate to a reasonable speed before reaching the scanners. The "W" and "H" indicators are approach lighted by the track circuit immediately approaching the signal (since this indication has a short-range aspect).

Operation is as follows: A train with a hot journal passes the holdout signal, which will go to "stop" as usual. Shortly afterward, it will pass the scanners. When the scanners perceive the hotbox, the hotbox indication and axle count are transmitted to the car identification panel, the "H" indicator is lighted and an "approach" aspect is caused to be displayed at a signal in advance of the train. Simultaneously, the holdout signal in the rear of the train is now prevented from clearing. If there had been no hotbox in the train, the holdout signal would have cleared as soon as the

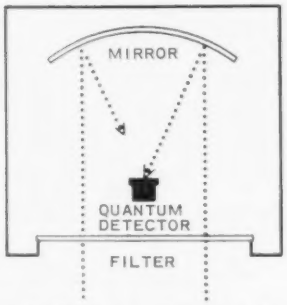
(*Continued on page 28*)

GRS WHEEL THERMO-SCANNER UNIT

SPEED with the key to reliable

LIGHTNING FAST RADIOMETER

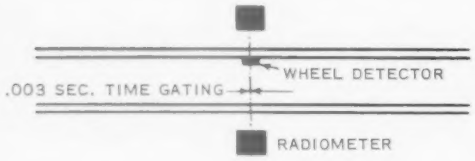
GRS RADIOMETER



Radiations are collected by mirror, and focused on quantum detector. Filter passes only infrared radiations in desired wave length range.

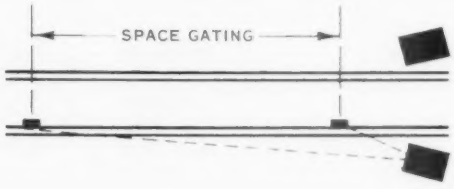
The GRS radiometer contains a tiny sealed element, a photon-responsive quantum detector. Its unique property is that it responds to heat radiation with lightning speed. Combined with an efficient interference-type filter to pass only the desired wave length range, it responds in *15 millionths of a second*—300 times faster than bolometer methods. A bolometer does not respond until its own temperature has been changed by the radiation being measured.

the GRS way—using photon sensor



The ultra-fast response of the photon sensor permits hub viewing with time gating of only .003 second—only one wheel detector is required—system is simpler and naturally applicable to double-direction traffic.

the slow way—using bolometer sensor



Systems using bolometer sensors are hundreds of times slower. When used with space gating, this type of heat detection scanning is subject to distortion by several causes: varying train speeds, heat variations between leading and trailing journal boxes, and by different types of wheel bearings.

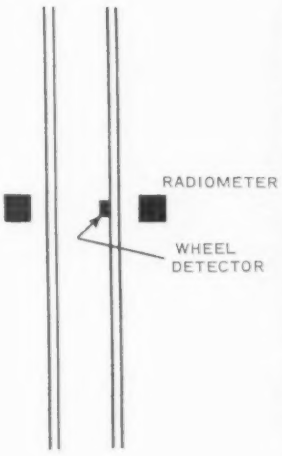
GENERAL RAILWAY

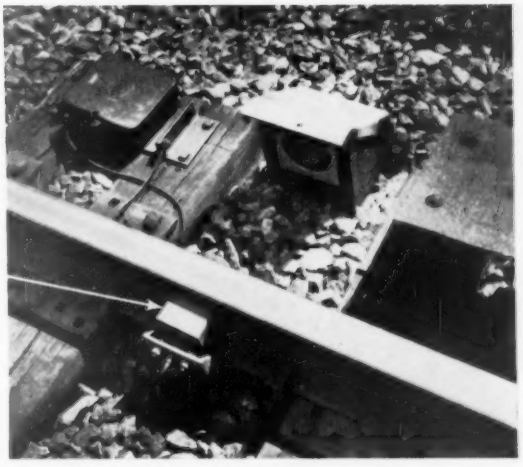
ROCHESTER 2, NEW YORK

ACCURACY
hot box detection

ONLY ONE WHEEL DETECTOR

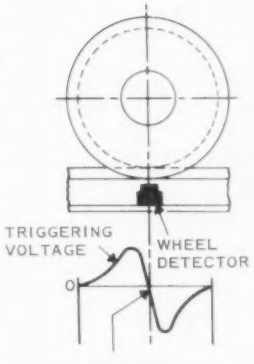
The GRS wheel detector is a single, inert unit. Encapsulated in epoxy resin, the detector is clamped to the rail, at the optical center line between the radiometers. As each wheel of the train passes through the detector's magnetic field, a triggering voltage is induced which results in operating the gate circuit.



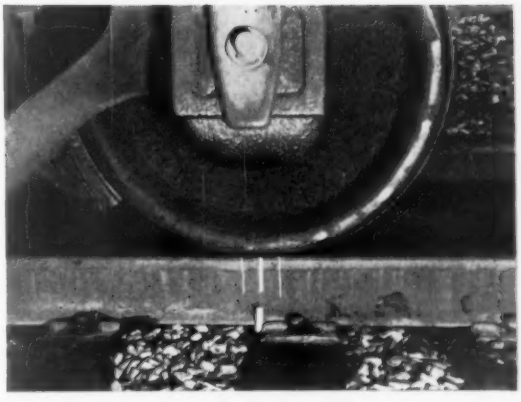


EFFECTIVE TIME GATING

GRS radiometers are focused on a point directly beneath the axle, centered on the hub. They scan continuously during the passage of a train to sense heat variations. But, *only* the significant portions of the scan are used. These portions are selected as each wheel rolls past the wheel detector, which automatically and precisely spots the center line of each wheel. This method is an effective, direct way of consistently hitting the bull's-eye, using the superior technique of ultra-fast time gating—obtainable only with the GRS photon radiometer.



ELECTRONIC GATE OPEN .003 SEC. AT CENTER OF WHEEL (SAME AT ALL SPEEDS)



Stroboscopic test photos proved gating accuracy —over all train speeds.

SIGNAL COMPANY

NEW YORK 17, NEW YORK CHICAGO 1, ILLINOIS ST. LOUIS 1, MISSOURI

3130

HOW TO TELL OF HOTBOXES (*Continued from page 25*)

track and signal circuits would allow.

When the engineman sees the "approach" aspect and "H" indicator lighted, he will brake his train to a stop with the engine near the hotbox locator panel. One of the headend trainmen will check the panel to locate the faulty journal and will then check the car to see what action need be taken. If the car is near the rear of the train, he will radio to the rearend trainmen the location of the hotbox, and they will check it.

When the location of the hotbox or hotboxes has been noted from the locator panel, a "cancel" button is pushed, which resets the counters to zero. If the trainman fails to cancel the reading, a track circuit will automatically cancel it when the train proceeds past the car identification panel. In CTC territory, the control machine operator can also cancel the reading.

The pengraph recorders, carrier, power supply, and associated equipment are housed in a precast concrete house. About once a week the maintainer removes the tape from the recorder and checks it for proper operation of the detector. The tape is then sent to the supervisor. A slow tape speed of 2.5 mm per second is used, giving each roll of tape a life of one to two weeks. A 9-mm difference in deflection (differential) between the ends of the same axle is used to trip the automatic alarm system, lighting the indicator to stop the train. The equipment is adjusted to produce a 2- to 3-mm normal deflection on a 1-mm pedestal.

At the one detector installation in ABS territory, a time recorder has been installed at the signal which includes the "H" indicator. The time recorder produces a tape which indicates the day and time, to the second, of the lighting and extinguishing of the "H" indicator light. This provides a record of each actuation and canceling of the hotbox indication, and is sent to the supervisor each week, along with the pengraph recorder tape.

A time recorder is unnecessary in CTC territory, since the indication is brought into the control machine by an indication code. The time recorder was placed at the "H" indicator, rather than at the hotbox recorder or locator panel site, since it was desired to check that the "H" indicator was actually lighted, thus checking carrier and lamp circuits (by means of a series relay in the lamp circuit).

Normal train speed in all detector areas is 60 mph for freight trains, 79 mph for passenger trains. The detector equipment currently includes engine eliminating equipment (determined by wheelbase), which also eliminates most passenger trains. The railroad is considering removing the engine elimination equipment, allowing passenger trains to be checked also. Examination has shown that wheel count and detection apparatus work satisfactorily at maximum passenger train speed. Although engine journals, like other roller bearings, normally operate at higher temperatures than friction bearings, they will not trip the alarm system unless there is a differential exceeding 9-mm deflection.

Information is transmitted by Union Switch & Signal unit carriers riding on a pair of wires reserved for the hotbox detector system. In ABS territory, a "cancel" pushbutton is provided at the scanner site for use by the maintainer. If, when testing the apparatus, he causes a hotbox indication to occur, he can cancel the indication from the scanner site. This maintainer's cancel button is not required in CTC territory, because the control machine operator can cancel the indication. Also, as an aid to testing, a knife switch is provided in the controlling relay case so the "H" and "W" indicators may be illuminated, without an actuation of the detector, provided the approach lighting circuit is completed also. The switch controlling the "H" indicator may also be closed by a supervisor to check whether trainmen are complying with the indication.

The hotbox detector equipment was supplied by Servo Corp. of America. All four detectors have been in service for over a year, and have performed well. Since the train crews have become aware of the accuracy of the equipment, the hotbox detector operation has been satisfactory.

SAL Has Talking Hotbox Detector

Seaboard Air Line radio broadcasts hotbox locations.

The Seaboard Air Line has installed what is probably the world's first talking hotbox detector. The installation is at Riceboro, Ga., 33 miles south of Savannah, on the SAL's single-track mainline to Jacksonville, Fla. In addition to a VHF wayside radio station, the Riceboro installation has two Servo Corp. basic hotbox detector systems, plus an alarm computer, engine eliminator, wheel count and transfer switch apparatus.

How this hotbox detector system operates is explained by J. R. De Priest, superintendent communications and signals, inventor of the "voice" portion of the operation. "As the engine passes the scanners in either direction, the following information is broadcast by radio: 'Seaboard Railroad, Riceboro, Ga.' This broadcast will be repeated until a few seconds after the rear of the train has passed the scanner location if no hotbox is detected. This signifies that the installation is operative and is scanning the train.

"If a hotbox is detected 345 axles from the rear of the train on the right side, after the entire train has passed the scanners, the following will be broadcast: 'Seaboard Railroad, Riceboro, Ga. First hotbox left side three-four-five.' If no additional hotboxes are detected in the train, that message will be repeated for approximately three minutes. If a second, third or fourth hotbox is detected the message would contain this, in addition to information on the first hotbox:

" 'Seaboard Railroad, Riceboro, Ga. Second hotbox right side three-zero-two. Seaboard Railroad, Riceboro, Ga. Third hotbox left side two-eight-eight. Seaboard Railroad, Riceboro, Ga. Fourth hotbox left side one-nine-zero.'

"In the above examples, I have, of course, assigned locations to the hotboxes. The automatically composed message will contain information as to the exact locations of the hotbox in the train. In addition to the voice broadcast information, a red indicator light at the scanner location is lighted when a hotbox is detected. This is a visual check for the crew in the caboose in the event radio reception containing hotbox information was not accomplished.

"In addition to radio broadcast of hotbox information, this voice information is also put into the dispatcher's telephone circuit, so the dispatcher receives by telephone information that the equipment is scanning the train and any information developed concern-

ing abnormal journal conditions in the train. The initial station-identifying information is repeated only one time on the dispatcher's circuit. Information concerning location of hotboxes in the train is repeated on the dispatcher's circuit until the dispatcher removes this transmission from his circuit by means of selector apparatus," Mr. De Priest said.

Information about hotboxes in the train is stored in the computer for transmission after the entire train has passed the scanner location. The information is automatically composed and translated into voice form through computers and multi-channel audio tape reproducers.

While the Riceboro installation has two Servo hotbox detectors, future installations will use only one basic Servo system (scanners, transducers and recorder) with three transducers and one alarm computer, the output of which will operate the translator equipment to store the appropriate information and translate it to voice form.

Seaboard is planning to provide a white light alongside the scanner red light at the site, which will be illuminated whenever the detector is scanning a train. Thus, the train crew will have a visual indication that the detector is functioning properly. As soon as a hotbox is detected, the white light will be extinguished and the red light will be illuminated.

All SAL freight trains are radio-equipped. When the dispatcher receives word of a hotbox from this "talking" detector, he checks via radio with the train crew to ascertain if they have received the message. In traffic control territory, if he can't contact the crew via radio, he will stop the train at a controlled signal.

Servo Corp., manufacturer of the hotbox detectors, has purchased rights for the manufacture and sale of the radio-relay (or "voice" portion) of the Riceboro installation. Seaboard installed nine hotbox detectors at nine locations last year, and plans to install detectors at 22 locations this year.

RADIO BROADCASTS hotbox locations to crews after SAL trains pass detector.

Hotbox Recordings Centralized

3 On Southern, all hotbox recorders are in a central office.

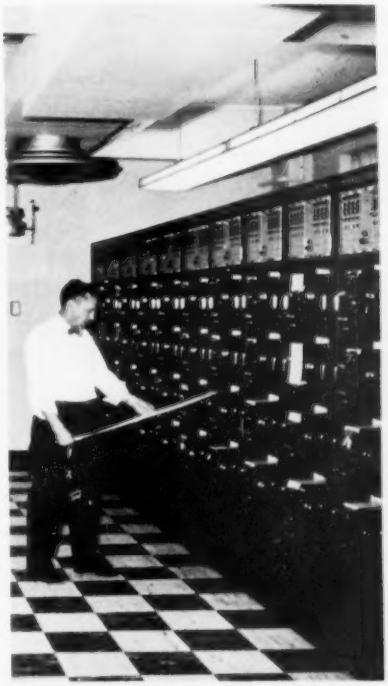
The Southern's approach to informing train crews of hotboxes, is to locate all pengraph recorders in one office at Atlanta, Ga. An attendant there inspects the recording tapes. When a journal is indicated hot, he so informs the train crew via radio. This hotbox locator center has 53 pengraph recorders receiving telemetered journal readings from 83 hotbox detectors at 68 locations. At 15 locations, detectors check trains moving in both directions; at all others only single-direction hotbox inspections are made.

When a train is inspected by a hotbox detector, coding on the recorder tape identifies the detector location and the direction in which the train is moving. Carrier is used on existing wire lines for transmitting hotbox detector information. However, the Southern plans to use microwave transmission for those detectors along the Atlanta-Washington mainline, 657 miles.

Dragging-equipment detectors will also be installed at these hotbox detector locations. Their actuation by dragging equipment will be telemetered by microwave or wireline carrier to the Atlanta detector center. The attendant will also inform the train crew, via radio, of actuation of the dragging-equipment detectors.

The Southern received ICC approval to install the dragging-equipment detectors without tying them into the signal system as required by Commission rules (136.602 ICC RS&I). The road's reason for requesting the approval is that, in all probability, the train crew will be notified much sooner via radio than with the conventional system, where a signal in advance of the train is caused to display "approach" and a second signal in advance to display "stop." The Southern's contention is that as soon as the dragging-equipment detector is actuated, the fast electronic communications almost instantly notifies the Atlanta attendant. He, in turn, radios the train crew, which can immediately take the necessary action.

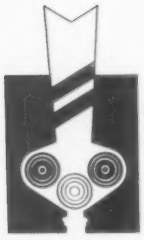
Southern also has 54 hotbox detectors in approach to yards which inspect arriving freight trains. Recorders are in mechanical department offices.



ATTENDANT READS TAPE at Atlanta office where all hotbox detector pengraph recorders are located.

AUTOMATION

THROUGH COMMUNICATIONS



works wonders in speeding up system operations

Nothing up the track holds greater promise of slashing railroad operating costs than *automation through communications.*

Lenkurt electronic systems place virtually all communications "on the line" for fully integrated, system-wide communication at high speed—telephone, telegraph, digital data *and* other control functions.

As a specialist in microwave and carrier, Lenkurt Electric is ready now to put these modern communications systems to work for *you.* And Lenkurt Electric has the talents and the resources for handling a complete system-wide turnkey installation from start to finish.

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Higher Capital Spending Seen

Preliminary estimates for total gross capital expenditures in 1961 appear to have understated the amount that will be spent by nearly $100,000,000. That is the conclusion to be drawn from figures appearing in Transport Economics and Statistics.

The Class I railroads in the first quarter of 1961 actually spent $165,330,000 in gross capital expenditures for additions and betterments. That amount, plus estimated expenditures of $203,610,000 for the second quarter, $166,414,000 for the third quarter and $114,717,000 for the fourth quarter give a total for the year 1961, actual and estimated, of $650,071,000. Preliminary estimates received from 101 Class I railroads had indicated that the total gross capital expenditures would be $556,900,000 in 1961.

Though better than the preliminary estimates, the $650,071,000 figure for 1961 is still 29.3 per cent less than the actual expenditure for 1960 of $919,100,000.

According to carrier estimates, expenditures for road in 1961 will total $260,831,000 (down 8.7 per cent from the $285,615,000 for road spent in 1960) while expenditures for equipment will total $389,240,000 (down 38.6 per cent from the 1960 equipment figure of $633,485,000).

Other figures announced by the Bureau of Transport Economics and Statistics showed that for Class I line-haul railroads as a whole, "quick assets" (cash and temporary cash investments) decreased from $1,611.8 million on March 31, 1960 to $1,248.2 million on the same date in 1961. This is a drop of 22.6 per cent.

The largest drop occurred in the Eastern district, where 1960 quick assets of $396,390,000 fell to a 1961 figure of $269,322,000 (32.1%). The Western district fell from $769,904,000 to $612,210,000 (20.5%). The Southern region dropped from $291,874,000 to $220,988,000 (24.3%) and the Pocahontas region from $153,671,000 to $145,699,000 (5.2%).

Net corporate working capital (total current assets less total current liabilities) for all Class I roads decreased from $1,312.6 million on March 31, 1960 to $943.3 million on the corresponding date in 1961. This is a decrease of 28.1 per cent.

The biggest relative decline in working capital was in the Eastern district (65.7%). The relative decline in the Western district was 22.6 per cent, in the Southern region 23.2 per cent, and in the Pocahontas region, 5.2 per cent.

Excluding materials and supplies, the total net working capital dropped 45.3 per cent, from $726.1 million in 1960 to $397.1 million in 1961. Materials and supplies decreased from $586.4 million in 1960 to $546.2 million in 1961 (6.9%).

New Mechanical Reefer: First of 210

Mechanical refrigerator car for fresh meat and packing house products, was delivered July 17 by General American Transportation Corporation. First of 210 cars to be built by General American for lease to four packing companies, it is also, according to Spencer D. Mosely, GATC president, the "first mechanical refrigeration car designed specifically for this traffic and more economical than all-purpose car." Car is 40 ft long, has 70,000-lb capacity, maintains 26 to 70 deg temperatures. Built with polystyrene foam insulation, car has propane-fueled engines to drive Thermo-King cooling unit. Inspecting first car are left to right, Paul Talmey, General American vice president; E. F. Majeske, Swift and Company general traffic manager; R. W. Reneker, Swift vice president; C.. L. Phillip, General American vice president, and Richard Lamport, assistant to vice president, Union Refrigerator Transit.

Eastern Roads Propose Low Coal Rates to Detroit

Eastern railroads have proposed reduced rates on bituminous steam coal moving into the Detroit area.

Under the proposal, present rates would be reduced 37½¢ per net ton on the first 6,000,000 tons delivered annually to a consignee, and 50¢ per net ton on all tonnage above 6,000,000.

The proposal is for a ten-year period, beginning Jan. 1, 1962. There are provisions, which, in effect, would prevent a consignee from receiving the benefits of the lower rates if he withdraws from the plan in less than ten years.

The proposal would also reduce rates 37½¢ per net ton on traffic moving from the effective date of the tariff to the end of 1961, "subject to a minimum aggregate tonnage to be determined on basis of the consignee's estimated consumption during that part of 1961 when the rates shall be in effect."

The Traffic Executive Association—Eastern Railroads has published the proposal as T. E. Bulletin No. 131. It applies on bituminous steam coal moving in carloads from all eastern producing districts to one or more plants of any consignee at Detroit, Marysville, River Rouge, St. Clair, and Trenton, Mich. It covers all-rail movements as well as rail-water movements via Lake Erie ports.

SP's NEW MILLION-DOLLAR MAIL FACILITY at Oakland is shown by mail and express manager H. S. Orner to Postmaster General J. Edward Day and Rep. J. Vaughan Gary of Treasury-Post Office Subcommittee.

OPERATION SPEED-UP — 7

SP: Pushbutton Sorting Speeds Mail

Ten trainloads a day of mail are reaching West Coast cities and towns faster, thanks to a new Southern Pacific facility at Oakland, Calif. Just dedicated, the new mail-handling installation uses pushbuttons and an electronic brain to keep letters and parcels moving fast. Cost of the new facility is $1 million.

Oakland is the hub of transcontinental and coastal rail operations on Southern Pacific. It will also be the location of a multi-million dollar U.S. postal center, to be linked to the new SP facility by conveyor belt, if present plans are put in effect.

SP's manager of mail and express, Harold S. Orner, says the new rail facility is the first of its kind in the West. To meet Post Office needs, Mr. Orner says, SP has speeded up train schedules for mail. It also has recently taken delivery of 100 new mail cars, and has 100 more on order. On its whole system, SP handles more than 35 million sacks and parcels of mail annually.

"We can handle 3,600 separate sacks or parcels an hour," Mr. Orner says of the new facility. "And, we're handling tons of mail now in minutes, instead of hours."

Oakland terminal's ten daily trainloads of mail serve the San Joaquin Valley and cities of the California coast south to Los Angeles, as well as northern California, Oregon, Nevada, Utah and transcontinental points.

A combination of electronic, pushbutton controls and rapid conveyors speeds up train-to-train transfer of mail and train-truck handling of first-class and other surface mail between the SP terminal and the large and small U.S. Post Offices in the San Francisco Bay area. Mail is handled directly between the Oakland rail facility and San Francisco, Oakland, Peninsula and East Bay post offices, which provide local postal service. Overseas mail is routed between the SP center and the Ferry Post Office.

Sacks of letters and parcels reaching the rail facility are unloaded from trucks or rail cars into any number of 158 chutes flanking one side of the 1,200-ft terminal. Mail is carried at rate of 300 ft per minute to a central distribution point for sorting through six pushbutton control stations. Operators push the appropriate button to route sacks and parcels to any of the 52 sorting stations. Mail then slides into conveyor carts, which automatically unload at the proper spot along a platform for mechanized transfer to trucks or cars of outbound connecting trains.

REVENUES AND EXPENSES OF RAILWAYS

(Dollar figures are stated in thousands; i.e., with last three digits omitted)

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1961

Name of Road		Average mileage operated during period	Operating Revenues Freight	Pass.	Total (inc. misc.) 1961	1960	Maint. Way and Structures Total 1961	Total 1960	Deprec and Retirements	Maint. Equipment Total 1961	Total 1960	Deprec. and Retirements	Traffic	Transportation	Total 1961	Total 1960	Operating ratio 1961	1960	Net from railway operation	Railway tax accruals	Net Railway operating income 1961	1960
Akron, Canton & Youngstown	May	171	479		489	506	50	57	6	79	71	16	44	167	384	378	78.5	74.7	105	66	30	43
	5 mos.	171	2,083		2,128	2,525	248	289	28	378	394	81	209	748	1,801	1,932	84.6	76.5	328	226	69	193
Alabama, Tennessee & Northern	May	214	215		221	171	49	55	6	9	46	6	4	117	182	224	82.2	130.7	39	6	—14	—55
	5 mos.	214	1,071		1,092	1,218	244	271	35	68	81	28	23	415	769	842	70.5	69.1	322	56		20
Atchison, Topeka & Santa Fe	May	12,997	44,087	3,137	52,135	51,913	7,224	7,897	876	10,113	10,772	2,676	1,505	18,742	39,926	42,434	76.6	81.7	12,209	7,277	4,104	2,644
	5 mos.	13,004	208,407	14,005	238,006	255,796	30,193	31,467	4,076	49,548	53,682	13,289	7,186	88,991	187,497	198,089	78.8	77.4	50,508	31,345	15,164	19,010
Atlanta & St. Andrews Bay	May	81	323		339	310	31	35	3	29	30	8	7	80	171	173	50.5	55.9	167	72	45	40
	5 mos.	81	1,466		1,508	1,602	154	182	17	139	141	40	35	373	826	857	54.8	53.5	682	295	183	222
Atlanta & West Point	May	93	228	17	296	313	34	41	8	48	48	15	19	128	252	259	85.2	82.7	44	16	—2	8
	5 mos.	93	1,127	92	1,452	1,560	161	212	42	238	254	75	94	616	1,220	1,320	84.0	84.6	232	79	3	16
Western of Alabama	May	133	276	15	332	336	47	43	12	56	53	20	21	140	288	285	86.7	85.0	44	24	12	10
	5 mos.	133	1,355	85	1,618	1,711	207	236	59	271	304	98	106	680	1,381	1,462	85.4	85.5	237	118	78	45
Atlantic Coast Line	May	5,570	12,124	837	13,970	14,691	1,646	1,950	171	2,492	2,630	701	532	5,551	10,982	11,398	78.6	77.6	2,989	1,425	853	898
	5 mos.	5,570	57,604	7,145	70,146	74,097	7,921	10,196	851	12,528	12,772	3,477	2,658	27,430	54,679	57,574	78.0	77.7	15,467	7,375	4,527	5,227
Baltimore & Ohio	May	5,910	25,139	1,203	28,773	34,810	3,847	3,862	483	5,580	6,413	1,055	850	13,387	25,401	27,792	88.3	79.8	3,372	2,276	—1,692	2,498
	5 mos.	5,910	115,286	6,039	133,080	168,232	17,343	18,381	2,257	26,024	33,874	5,117	4,029	64,362	120,608	139,648	90.6	83.0	12,472	11,055	—12,121	6,177
Staten Island Rapid Transit	May	29	166	98	270	278	61	53	16	43	45	2	2	158	293	283	108.6	101.7	—23	53	—99	—73
	5 mos.	29	784	476	1,311	1,325	282	286	59	218	236	7	10	784	1,440	1,456	109.8	109.9	—129	260	—516	—473
Bangor & Aroostook	May	595	1,159	17	1,228	1,178	258	315	22	290	249	108	31	346	1,103	1,045	82.5	88.7	215	168	181	180
	5 mos.	595	6,765	92	7,115	7,557	1,546	1,966	101	1,470	1,384	546	148	2,019	5,628	6,018	79.1	79.6	1,486	809	901	1,222
Bessemer & Lake Erie	May	203	1,147		1,207	2,817	147	305	34	337	658	104	45	361	1,040	1,711	86.1	60.7	167	102	550	639
	5 mos.	203	4,256		4,498	10,148	712	1,221	170	2,713	3,165	512	174	1,699	6,087	7,777	135.3	76.6	—1,589	439	8	1,620
Boston & Maine	May	1,554	5,216	415	6,020	5,983	564	639	152	825	886	235	142	2,517	4,329	4,529	71.9	75.7	1,691	440	536	444
	5 mos.	1,554	23,699	2,177	27,795	30,121	2,987	3,348	690	3,997	4,411	1,181	646	12,628	21,724	22,953	78.1	76.2	6,071	2,068	248	2,074
C P R Lines in Maine	May	234	473	29	526	403	89	103	20	49	68	18	17	134	317	364	60.3	90.4	209	38	95	—36
	5 mos.	234	4,306	169	4,601	4,543	468	460	101	570	589	90	86	959	2,222	2,366	48.3	52.1	2,379	144	1,723	1,548
Carolina & Northwestern	May	284	282		288	247	36	31	8	32	24	21	6	80	166	152	57.7	61.4	122	28	63	43
	5 mos.	284	1,220		1,242	1,337	191	140	38	161	134	105	26	373	816	772	65.7	57.5	426	82	134	207
Central of Georgia	May	1,745	3,341	93	3,654	3,718	500	599	42	586	764	161	176	1,574	3,032	3,222	83.0	86.7	622	273	273	173
	5 mos.	1,745	15,776	605	17,410	18,384	2,515	2,934	225	2,917	3,761	792	869	7,488	14,805	15,902	85.0	86.5	2,606	1,330	950	1,014
Central of New Jersey	May	592	3,297	455	4,208	4,351	461	498	97	703	690	169	82	2,159	3,622	3,533	86.1	81.2	586	491	—338	—39
	5 mos.	592	15,535	2,244	20,059	21,563	2,377	2,465	484	3,418	3,595	799	386	10,896	18,115	18,342	90.3	85.1	1,944	2,462	—2,837	—990
Central Vermont	May	375	734	30	825	836	224	254	18	114	117	9	20	376	766	770	92.9	92.1	59	54	—94	—118
	5 mos.	375	3,301	209	3,874	4,060	838	800	88	543	592	46	98	1,649	3,282	3,354	84.7	82.6	592	261	—184	—104
Chesapeake & Ohio	May	5,091	24,381	525	26,883	31,399	3,300	3,600	845	5,409	5,248	1,958	873	10,766	21,967	22,253	81.7	70.9	4,917	2,018	3,104	4,997
	5 mos.	5,091	110,968	2,302	119,174	146,076	14,200	16,700	2,603	25,885	26,572	9,810	4,291	50,309	103,155	108,645	86.6	74.4	16,020	5,817	11,512	20,809
Chicago & Eastern Illinois	May	862	2,452	137	2,828	2,961	353	395	31	488	555	178	108	1,143	2,277	2,458	80.5	83.0	551	213	132	68
	5 mos.	862	11,261	718	13,282	14,379	1,550	1,812	153	2,406	2,672	892	617	5,684	11,156	12,014	84.0	83.6	2,126	1,147	—8	510
Chicago & Illinois Midland	May	121	735		746	626	56	45	7	129	96	24	30	167	431	380	57.8	60.7	315	172	123	92
	5 mos.	121	3,240		3,310	3,252	251	220	38	663	523	122	153	808	2,120	1,919	64.1	59.0	1,190	627	457	530
Chicago & North Western	May	10,709	17,426	1,287	19,502	19,993	3,072	3,227	419	2,781	3,274	1,167	629	7,414	14,906	16,322	76.4	81.6	4,595	1,398	2,019	967
	5 mos.	10,732	73,780	6,359	84,502	91,615	13,651	14,556	2,021	14,895	16,019	5,793	3,285	36,366	73,596	79,387	87.1	86.7	10,906	6,986	—65	—464
Chicago, Burlington & Quincy	May	8,597	18,126	1,626	22,100	20,613	2,971	2,859	409	3,732	3,544	1,128	666	8,725	17,133	16,494	77.5	80.0	4,967	2,536	1,983	1,618
	5 mos.	8,608	83,408	7,419	102,054	100,156	12,974	12,717	2,544	17,869	18,912	5,063	3,239	41,198	80,539	81,604	78.9	81.5	21,515	12,223	7,392	6,941
Chicago Great Western	May	1,469	2,396	7	2,600	2,808	346	376	46	457	416	135	124	986	2,007	1,992	77.2	70.9	592	221	118	220
	5 mos.	1,469	11,374	33	12,373	13,648	1,574	1,679	221	2,136	2,111	669	617	4,761	9,544	9,642	77.1	70.7	2,829	1,078	574	1,160
Chicago, Milw., St. Paul & Pac	May	10,562	15,523	948	18,677	18,976	2,542	3,306	453	3,139	3,460	908	572	7,393	14,964	16,149	80.1	85.1	3,713	1,682	978	93
	5 mos.	10,574	71,686	4,837	86,133	91,874	12,444	14,030	2,320	15,302	16,857	4,474	2,632	35,979	72,616	78,288	84.3	85.2	13,517	8,179	837	1,008
Chicago, Rock Island & Pacific	May	7,850	14,320	1,159	17,282	17,595	2,155	2,392	264	3,020	3,187	671	499	7,001	13,628	14,261	78.9	81.1	3,654	1,474	678	552
	5 mos.	7,850	69,213	6,072	83,876	87,544	9,798	10,928	1,276	14,346	15,194	3,277	2,539	34,772	66,317	69,745	79.1	79.7	17,559	7,208	3,236	3,368
Clinchfield	May	306	1,772		1,781	1,799	186	211	23	290	368	106	69	439	1,050	1,155	59.0	64.2	730	201	650	547
	5 mos.	298	8,342		8,386	8,736	897	982	112	1,420	1,756	529	341	2,170	5,169	5,668	61.6	64.9	3,216	999	2,631	2,729
Colorado & Southern	May	712	1,154	62	1,369	1,194	162	34	291	198	81	35	576	1,173	1,037	85.7	77.2	195	89	40	132
	5 mos.	712	4,986	263	5,993	6,532	857	822	151	1,221	1,092	406	174	2,715	5,370	5,120	89.6	78.4	623	391	172	556
Ft. Worth & Denver	May	1,039	1,419	134	1,780	1,574	263	244	33	275	294	40	71	809	1,550	1,521	87.1	96.6	230	23	—26	—87
	5 mos.	1,039	7,523	557	9,185	9,343	1,111	1,114	161	1,353	1,169	222	363	4,093	7,584	7,319	82.6	78.3	1,602	296	47	316
Colorado & Wyoming	May	39	227		356	296	19	34	2	38	28	12	2	126	201	200	56.4	67.6	158	96	58	29
	5 mos.	39	792		1,351	2,009	84	111	10	160	159	62	10	523	839	1,098	62.1	54.7	512	331	173	332
Delaware & Hudson	May	763	3,216	95	3,404	3,749	330	422	63	690	892	196	109	1,320	2,678	3,070	78.7	81.9	726	362	221	393
	5 mos.	763	16,201	566	17,248	19,538	1,789	2,016	343	3,429	4,398	988	521	6,762	13,764	15,479	79.8	79.2	3,483	1,871	876	2,476
Denver & Rio Grande Western	May	2,128	6,022	216	6,443	6,392	778	834	98	998	986	329	228	1,997	4,321	4,412	67.1	69.0	2,122	1,211	880	829
	5 mos.	2,128	27,949	961	29,880	32,143	3,035	3,584	485	4,768	4,935	1,681	1,179	9,525	20,104	21,363	67.3	66.5	9,776	5,719	4,116	4,542
Detroit & Toledo Shore Line	May	50	509		513	589	45	55	4	65	74	24	21	197	345	396	67.3	67.3	168	66	27	32
	5 mos.	50	2,491		2,625	3,230	240	280	19	327	392	121	101	1,001	1,755	2,056	66.9	63.7	870	362	153	195
Detroit, Toledo & Ironton	May	465	1,538		1,603	1,690	309	269	114	341	458	157	60	477	1,288	1,348	80.3	79.8	315	119	271	241
	5 mos.	465	6,699		6,931	9,486	1,024	1,318	218	1,681	2,169	779	291	2,368	5,842	6,839	84.3	72.1	1,090	569	851	1,940
Duluth, Miss. & Iron Range	May	572	2,717		3,165	7,530	589	544	243	522	615	204	13	969	2,385	3,202	75.3	42.5	780	280	517	3,758
	5 mos.	572	3,945	1	4,703	13,635	2,197	2,342	573	2,584	3,429	1,021	65	3,217	9,482	12,220	201.6	89.6	—4,779	761	—5,697	135
Duluth, Winnipeg & Pacific	May	175	480	1	483	447	119	97	4	56	61	1	8	179	373	356	77.2	79.7	110	45	—6	—20
	5 mos.	175	2,252	3	2,260	2,402	413	404	24	291	290	6	40	879	1,682	1,685	74.4	70.1	578	208	—44	94

(Dollar figures are stated in thousands; i.e., with last three digits omitted)

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1961

Name of Road		Average mileage operated during period	Operating Revenues: Freight	Pass.	Total (inc. misc.) 1961	1960	Operating Expenses: Maint. Way and Structures: Total 1961	1960	Deprec and Retirements	Maint. Equipment: Total 1961	1960	Deprec. and Retirements	Traffic	Transportation	Total 1961	1960	Operating ratio 1961	1960	Net from railway operation	Railway tax accruals	Net Railway operating income 1961	1960
Elgin, Joliet & Eastern	May	81	7,759		3,530	4,385	260	439	31	615	918	130	48	1,341	2,579	3,103	71.0	77.5	1,052	579	320	217
	5 mos.	205	12,256		15,951	24,340	1,414	1,739	141	2,840	4,431	643	233	6,464	12,590	17,659	78.9	72.6	3,361	2,038	811	1,425
Erie-Lackawanna	May	7,076	14,503	1,300	17,578	18,665	1,918	1,711	415	3,553	3,289	835	548	9,290	16,403	16,202	93.3	86.8	1,175	1,929	1,945	510
	5 mos.	3,077	68,461	6,645	84,191	93,529	9,870	9,590	1,987	16,810	16,778	4,475	2,640	45,757	80,755	81,636	95.9	84.6	3,436	9,232	11,914	135
Florida East Coast	May	572	2,098	241	2,576	2,864	297	372	59	454	490	116	70	1,032	2,050	2,166	79.6	75.6	526	270	18	305
	5 mos.	572	10,028	2,427	13,858	15,549	1,595	2,088	207	2,434	2,828	578	361	5,547	10,929	11,958	78.9	76.9	2,929	1,474	273	1,167
Georgia Railroad	May	321	513	12	605	676	86	89	9	111	111	34	49	286	562	560	93.0	82.9	42	39	3	83
	5 mos.	321	2,457	63	2,935	3,177	408	422	42	542	573	168	203	1,393	2,744	2,855	93.5	89.9	191	193	19	202
Georgia & Florida	May	321	390		442	278	77	152	5	67	44	10	23	121	310	320	99.4	114.9	2	19	46	80
	5 mos.	321	1,430		1,853	1,402	379	571	17	239	212	50	114	480	1,316	1,448	90.5	103.3	138	98	84	243
Grand Trunk Western	May	946	3,655	194	4,217	4,657	674	803	63	799	926	77	101	2,115	3,932	4,320	93.2	92.8	285	379	454	612
	5 mos.	946	17,075	869	19,430	24,631	3,047	3,399	291	3,683	4,347	381	489	10,113	18,555	20,821	95.5	84.5	875	1,907	3,038	532
Great Northern	May	8,276	15,623	722	17,712	22,682	4,076	4,064	327	3,468	3,750	938	546	7,068	16,191	16,884	91.4	74.4	1,521	1,872	443	2,042
	5 mos.	8,278	75,737	3,137	84,876	95,185	14,807	14,280	1,653	17,875	18,956	4,652	2,718	35,196	75,575	77,510	89.0	81.4	9,301	9,142	1,018	5,638
Green Bay & Western	May	219	393		404	357	46	55	5	56	47	9	26	112	253	276	62.5	77.3	151	79	41	15
	5 mos.	219	1,764		1,821	1,844	180	252	24	268	233	45	133	567	1,270	1,346	69.7	73.0	551	272	119	85
Gulf Mobile & Ohio	May	2,747	6,068	212	6,688	6,696	750	914	81	1,318	1,316	292	262	2,315	4,984	5,215	74.5	77.9	1,704	765	402	448
	5 mos.	2,747	28,408	1,122	31,740	32,788	3,626	4,412	381	6,244	6,783	1,466	1,300	11,158	23,956	26,025	75.5	79.4	7,784	3,421	2,028	1,830
Illinois Central	May	6,466	17,509	1,715	21,456	22,022	2,989	3,304	567	3,647	4,428	867	661	8,589	16,962	18,270	79.1	83.0	4,494	2,448	1,371	1,010
	5 mos.	6,593	81,554	8,540	100,995	109,505	13,841	16,090	2,109	17,546	21,561	4,539	3,232	41,778	81,690	89,705	80.9	81.9	19,304	10,615	5,463	4,903
Illinois Terminal	May	335	690		772	774	80	75	5	116	145	26	40	304	598	636	77.0	82.1	179	57	48	
	5 mos.	335	3,007		3,369	3,786	404	402	13	612	736	132	205	1,472	2,961	3,207	87.9	84.7	408	181	107	19
Kansas City Southern	May	894	2,943	72	3,408	3,805	256	330	52	430	513	113	93	1,125	2,031	2,284	59.6	60.0	1,378	533	571	652
	5 mos.	894	14,869	284	16,889	18,562	1,163	1,382	249	2,136	2,529	564	468	5,681	10,047	11,011	59.5	59.3	6,842	2,693	2,699	3,025
Kansas, Oklahoma & Gulf	May	327	454		455	430	67	38	12	35	38	12	34	106	271	254	59.6	59.0	184	78	56	40
	5 mos.	327	2,144		2,150	2,121	218	187	52	181	204	62	164	512	1,225	1,245	57.0	58.7	926	395	278	251
Lake Superior & Ishpeming	May	160	391		479	796	53	62	12	77	77	36	2	103	275	323	47.2	40.5	253	46	222	375
	5 mos.	160	670		819	1,553	214	258	61	331	381	178	11	313	929	1,209	113.5	77.9	110	207	266	110
Lehigh & Hudson River	May	98	281		282	271	27	29	2	35	30	8	16	110	205	202	72.7	74.6	77	32	10	10
	5 mos.	98	1,365		1,359	1,279	140	127	12	169	153	42	80	556	1,030	989	75.2	77.4	340	105	2	9
Lehigh & New England	May	177	233		238	384	39	36	7	114	191	37	7	112	314	436	131.7	113.5	75	24	38	21
	5 mos.	177	858		874	1,663	203	216	42	574	860	185	32	509	1,618	2,213	185.1	133.1	744	121	564	282
Lehigh Valley	May	1,114	3,631	4	3,779	4,334	477	619	97	715	706	203	134	1,983	3,514	3,859	93.0	89.0	265	422	463	257
	5 mos.	1,117	17,048	116	17,954	23,029	2,540	3,058	486	3,487	3,966	905	647	10,212	17,981	20,393	100.3	88.6	46	2,124	3,828	872
Long Island	May	344	906	4,863	5,896	6,078	817	850	94	1,093	1,073	168	41	3,045	5,243	5,160	88.9	84.9	654	412	63	285
	5 mos.	344	4,015	23,938	28,751	29,338	4,254	4,305	515	5,723	5,569	841	204	15,113	26,519	26,174	92.2	89.2	2,232	2,012	719	26
Louisiana & Arkansas	May	746	1,754	43	1,914	2,037	191	241	20	275	309	97	76	688	1,308	1,396	68.3	68.5	606	295	177	199
	5 mos.	746	8,611	183	9,328	10,737	819	983	104	1,403	1,581	487	383	3,373	6,343	6,761	68.0	63.0	2,985	1,574	837	1,408
Louisville & Nashville	May	5,684	17,717	578	19,706	19,856	2,000	1,900	320	3,211	4,717	1,270	536	7,957	14,685	15,801	74.5	79.6	5,021	2,665	1,703	1,378
	5 mos.	5,684	81,025	2,948	90,617	97,198	10,867	11,300	1,607	17,133	20,953	6,190	2,640	37,772	73,369	77,127	81.0	79.4	17,248	10,735	6,266	7,342
Maine Central	May	937	1,884		2,015	2,072	367	361	28	355	379	78	33	715	5,871	1,574	78.8	75.9	428	197	122	174
	5 mos.	937	9,842		10,447	11,028	1,746	1,740	142	2,005	1,925	384	146	3,733	8,217	8,184	78.7	74.2	2,250	1,019	607	977
Minn., Northfield & Southern	May	77	297		312	325	31	27	3	39	43	13	36	85	225	232	72.3	71.5	86	55	28	29
	5 mos.	77	1,325		1,419	1,570	111	99	14	184	221	64	171	398	1,051	1,117	74.1	71.1	368	236	110	144
Missouri-Illinois	May	172	465		468	500	41	34	4	94	90	40	14	131	294	298	62.8	59.6	174	131	71	85
	5 mos.	172	2,035		2,051	2,376	247	191	25	451	443	200	71	616	1,457	1,424	71.0	59.9	595	537	237	434
M-K-T Lines	May	2,885	4,654	60	5,119	4,827	616	591	111	998	881	259	179	1,850	3,857	3,652	75.4	75.7	1,261	351	261	311
	5 mos.	2,886	20,948	309	23,202	23,205	2,656	2,449	484	4,113	4,593	1,297	845	8,640	17,284	17,479	74.5	75.3	5,918	1,712	1,190	1,599
Missouri Pacific	May	9,361	22,318	783	25,539	25,139	2,937	3,570	334	3,964	4,286	1,158	663	9,374	17,932	19,256	70.2	76.6	7,607	2,634	3,221	2,674
	5 mos.	9,361	103,148	3,986	119,110	123,527	13,706	16,004	1,644	19,740	21,544	5,848	3,474	45,901	88,132	93,606	74.0	75.8	30,978	10,373	12,946	13,857
Monon	May	541	1,255	27	1,367	1,521	195	235	30	298	283	76	104	607	1,305	1,352	95.5	88.9	62	102	113	24
	5 mos.	541	6,291	131	6,853	7,835	1,001	1,155	137	1,417	1,397	380	533	3,099	6,589	6,858	96.1	87.5	265	554	637	45
Monongahela	May	177	508		511	555	83	72	11	50	56	11	1	124	271	254	53.1	45.8	240	71	103	406
	5 mos.	177	2,649		2,664	2,973	370	366	65	238	274	55	5	659	1,350	1,430	50.7	48.1	1,313	453	549	1,112
New York Central	May	10,245	39,074	4,973	51,268	57,842	5,544	6,571	1,115	10,184	11,250	2,280	946	25,173	44,452	48,636	86.7	84.1	6,816	5,604	1,220	1,941
	5 mos.	10,256	179,526	24,095	239,323	292,938	26,806	31,457	5,461	50,917	56,250	11,964	4,986	124,288	220,331	244,000	92.1	83.3	18,992	26,967	20,118	11,095
Pittsburgh & Lake Erie	May	220	2,082	26	2,231	3,230	362	427	57	955	939	338	56	930	2,473	2,713	110.8	84.0	242	217	463	919
	5 mos.	220	8,784	145	9,544	16,668	1,678	2,092	289	4,557	4,445	1,683	294	4,520	12,033	13,705	126.1	82.2	2,489	1,068	1,441	5,163
New York, Chic. & St. Louis	May	2,170	10,611	84	11,045	12,773	1,088	1,582	148	1,807	2,209	454	303	4,387	8,092	9,576	73.3	75.0	2,953	1,526	1,128	1,125
	5 mos.	2,170	48,860	482	51,215	64,485	5,328	6,608	741	8,711	10,560	2,279	1,703	21,097	39,352	45,719	76.8	70.9	11,862	5,400	4,513	6,648
New York, New Haven & Hart	May	1,740	5,979	3,404	10,728	11,473	1,673	1,457	279	2,097	1,888	527	266	5,506	10,438	10,119	97.3	88.2	290	665	1,806	1,150
	5 mos.	1,741	27,290	17,341	51,594	57,940	7,907	6,954	1,372	10,488	9,482	2,626	1,244	27,504	51,592	51,119	100.0	88.2	2	3,570	10,927	5,857
New York Connecting	May	21	365		382	336	52	126	25	11	41			81	148	288	38.7	85.5	234	107	96	74
	5 mos.	21	1,463		1,563	1,743	328	403	127	64	102			378	789	1,050	50.4	60.2	775	500	144	101
New York, Sus. & Western	May	97	293	5	313	321	41	40	6	43	51	8	10	142	267	287	85.3	89.5	46	30	24	41
	5 mos.	97	1,418	30	1,562	1,716	199	218	30	222	259	40	41	735	1,349	1,469	86.4	85.6	213	153	155	129
Norfolk & Western	May	2,746	19,609	185	20,583	21,722	1,976	2,046	394	3,242	3,192	1,493	392	5,410	11,978	12,085	58.2	55.6	8,604	4,451	5,119	5,979
	5 mos.	2,747	89,863	919	94,796	106,181	9,996	11,134	1,903	14,924	17,139	7,459	1,942	25,823	56,316	62,255	59.4	58.6	38,479	19,519	23,003	27,550
Norfolk Southern	May	593	827		837	840	156	182	15	127	116	40	48	278	693	685	82.8	81.6	144	55	60	56
	5 mos.	593	3,779		3,866	3,886	804	831	77	619	632	200	245	1,325	3,364	3,278	87.0	84.4	502	271	61	226

(Continued on next page)

REVENUES AND EXPENSES OF RAILWAYS

REVENUES AND EXPENSES OF RAILWAYS

(Dollar figures are stated in thousands; i.e., with last three digits omitted)

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1961

Name of Road		Average mileage operated during period	Operating Revenues — Freight	Pass.	Total (inc. misc.) 1961	1960	Operating Expenses — Maint. Way and Structures — Total 1961	Total 1960	Deprec. and Retirements	Maint. Equipment — Total 1961	Total 1960	Deprec. and Retirements	Traffic	Transportation	Total 1961	Total 1960	Operating ratio — 1961	1960	Net from railway operation	Railway tax accruals	Net Railway operating income 1961	1960
Northern Pacific	May	6,800	12,480	453	14,059	14,824	2,599	2,690	305	2,750	2,704		851	420	5,766	12,483	12,513	88.8	84.4	1,576	1,430	612	851
	5 mos.	6,800	56,270	2,054	63,379	70,575	9,946	10,966	1,723	13,688	14,300		4,250	2,056	28,222	58,775	61,496	92.7	87.1	4,604	6,877	—703	2,625
Northwestern Pacific	May	328	1,043	1	1,050	1,039	162	178	19	65	73		3	7	272	534	583	50.8	56.1	516	193	89	57
	5 mos.	328	4,315	3	4,339	4,970	770	1,010	97	272	359		13	33	1,124	2,453	3,038	56.5	61.1	1,585	648	261	139
Pacific Electric	May	336	1,252		1,359	1,146	163	299	25	46	55		4	22	570	988	923	66.8	80.5	452	143	84	—121
	5 mos.	335	5,371		6,040	5,610	796	904	124	226	179		18	103	2,544	4,188	4,259	69.3	75.9	1,853	717	175	—250
Pennsylvania	May	9,865	51,487	7,581	67,215	78,774	6,720	8,107	1,476	12,661	14,288	[3]	3,056	1,101	31,851	56,410	62,419	83.9	79.2	10,805	5,840	365	3,665
	5 mos.	9,865	234,077	43,504	318,226	387,129	32,828	38,792	7,414	62,719	74,705		15,207	5,537	155,891	277,846	314,654	87.3	81.3	40,380	28,741	—14,872	11,531
Penn-Reading S. S. Lines	May	338	495	52	563	650	144	176	25	115	123		26	6	452	780	835	138.4	28.5	—216	69	—427	—440
	5 oms.	338	2,238	243	2,571	3,206	763	877	128	590	623		128	29	2,303	4,047	4,201	157.4	131.0	—1,476	354	—2,607	—2,234
Piedmont & Northern	May	126	473		484	468	53	50	7	32	37		10	35	98	263	251	54.3	53.6	221	102	65	60
	5 mos.	126	2,263		2,328	2,450	238	233	27	176	189		48	167	478	1,270	1,246	54.6	50.9	1,057	533	261	340
Pittsburgh & West Virginia	May	132	505		508	655	138	147	25	119	149		40	51	185	546	599	107.4	91.5	—38	41	—108	38
	5 mos.	132	2,357		2,570	3,785	571	747	125	624	760		216	271	912	2,666	3,210	112.5	84.8	—297	204	—574	335
Quanah, Acme & Pacific	May	120	262		264	264	18	22	2	18	13			13	62	134	136	50.6	51.5	130	44	47	40
	5 mos.	120	1,254		1,264	1,366	95	86	8	81	66		1	117	268	657	635	52.0	46.5	607	97	324	276
Reading	May	1,294	7,210	490	8,378	8,615	1,133	1,041	198	1,704	1,625		433	178	3,754	7,248	7,149	86.5	73.0	1,130	666	—24	638
	5 mos.	1,295	33,073	2,604	39,064	46,606	5,715	5,494	991	8,574	8,899		2,261	872	19,033	36,735	37,893	94.0	81.3	2,329	3,301	—4,166	3,127
Richmond, Fred. & Potomac	May	118	1,429	314	1,977	2,124	157	175	29	285	305		67	29	742	1,350	1,355	68.3	63.8	627	349	129	200
	5 mos.	118	6,275	2,108	9,900	10,845	789	870	144	1,472	1,471		336	142	3,651	6,859	6,703	68.9	61.8	3,101	1,803	646	1,262
Rutland	May	391	522		938	878	75	75	8	59	66		18	26	119	302	345	89.4	91.3	36	27	10	
	5 mos.	391	1,529		1,641	1,807	357	373	42	297	299		91	124	603	1,498	1,700	91.3	94.1	143	130	6	—50
St. Louis-San Francisco	May	4,546	8,683	147	9,575	9,369	1,341	1,519	214	1,586	1,698		607	374	3,975	7,894	8,159	82.5	87.1	1,680	598	758	831
	5 mos.	4,546	41,219	745	45,609	49,022	6,313	7,509	925	7,642	8,189		3,054	1,802	18,936	37,676	40,292	82.6	82.2	7,933	3,137	3,610	4,665
St. Louis, S. F. & Texas	May	143	485		503	418	45	31	4	21	25		1	22	151	253	241	50.3	57.6	250	98	97	42
	5 mos.	143	2,124		2,213	2,281	239	149	20	115	141		6	110	724	1,254	1,202	56.6	52.7	960	359	275	315
St. Louis Southwestern Lines	May	1,554	5,553		5,623	5,602	534	592	94	653	727		231	184	1,909	3,463	3,467	61.6	61.9	2,160	1,059	595	973
	5 mos.	1,554	26,257	—1	26,601	28,826	2,665	2,886	428	3,239	3,500		1,126	920	9,022	16,746	17,155	63.0	59.5	9,855	4,585	4,051	5,113
Savannah & Atlanta	May	144	415		425	388	70	69	2	68	71		19	17	127	294	285	69.2	73.6	131	67	45	36
	5 mos.	144	1,758		1,826	1,800	312	259	18	343	343		97	84	606	1,413	1,336	77.4	74.2	413	224	130	190
Seaboard Air Line	May	4,135	11,358	881	13,260	13,861	1,795	1,835	210	2,545	2,623		755	499	4,989	10,524	10,617	79.4	76.6	2,736	1,276	988	1,622
	5 mos.	4,135	54,484	6,087	66,167	70,418	8,858	8,877	1,087	12,914	12,942		3,789	2,464	24,652	52,433	52,723	79.2	74.9	13,734	6,305	5,372	8,177
Soo Line	May	4,716	5,810	64	6,236	6,674	877	1,025	105	1,064	1,188		280	219	2,560	5,118	5,663	82.1	84.9	1,118	550	365	212
	5 mos.	4,716	27,834	233	29,681	30,731	3,834	4,702	551	5,548	5,859		1,397	1,144	12,790	25,320	27,393	85.3	89.1	4,361	2,420	631	—235
Southern Railway	May	6,267	20,133	768	22,565	22,509	2,858	2,988	424	3,934	3,930		1,090	551	7,172	15,838	15,597	70.2	69.3	6,727	3,038	2,851	3,129
	5 mos.	6,267	92,421	3,995	104,846	112,230	13,598	13,978	2,032	19,064	19,397		5,265	2,691	34,745	76,701	77,618	73.2	69.2	28,145	11,849	11,517	15,091
Alabama Great Southern	May	327	1,090	36	1,269	1,309	225	298	36	316	289		84	45	488	1,184	1,236	93.3	94.5	85	119	—61	46
	5 mos.	327	5,100	192	6,048	6,874	1,215	1,376	117	1,525	1,645		419	219	2,393	5,903	6,265	97.6	91.1	145	501	—600	—164
Cinn., N. O. & Tex. Pac	May	337	2,392	62	2,684	3,188	630	619	123	816	724		266	88	889	2,624	2,519	97.8	79.0	59	260	—63	518
	5 mos.	337	11,803	319	13,370	16,178	3,061	2,978	569	3,894	3,817		1,349	432	4,206	12,603	12,708	94.3	78.6	767	1,299	188	2,500
Georgia Southern & Florida	May	397	554	23	669	645	140	163	11	67	76		11	22	252	536	590	80.2	91.6	132	38	—73	—150
	5 mos.	397	2,799	139	3,397	3,848	649	872	57	342	377		54	109	1,233	2,618	2,954	77.1	76.8	778	181	—149	—128
New Orleans & Northeastern	May	203	825	28	935	847	167	215	25	223	226	102	29	275	774		809	82.8	95.5	161	87	130	5
	5 mos.	203	3,723	160	4,286	4,253	926	968	122	1,128	1,086	510	141	1,291	3,882		3,870	90.6	91.0	404	434	83	213
Southern Pacific	May	7,948	42,823	1,751	47,088	46,412	5,050	5,411	575	10,065	10,501	2,648	767	17,609	35,747		36,347	75.9	78.3	11,342	5,962	4,556	4,126
	5 mos.	7,952	189,994	9,324	211,335	224,491	23,907	25,750	2,524	46,561	49,887	13,149	3,740	80,906	166,036		173,017	78.6	77.1	45,299	24,921	18,959	23,358
Texas & New Orleans	May	4,099	10,774	268	11,701	11,510	1,622	1,835	242	1,862	1,730	205	254	4,430	8,771		8,543	75.0	74.2	2,940	1,047	522	556
	5 mos.	4,099	48,995	1,291	53,516	56,144	7,643	8,916	889	8,622	8,385	970	1,296	20,441	41,018		41,932	76.6	74.7	12,497	4,223	1,492	2,470
Spokane International	May	150	283		291	292	53	58	5	23	24	9	4	72	161		171	55.1	58.5	131	24	67	24
	5 mos.	150	1,404		1,450	1,468	249	269	22	105	143	48	20	346	767		835	52.9	56.9	683	236	294	188
Spokane, Portland & Seattle	May	936	2,229	60	2,483	2,920	412	495	59	417	443	129	35	1,064	2,050		2,190	82.6	75.0	433	236	81	371
	5 mos.	936	10,874	332	12,132	13,649	2,101	2,156	297	2,141	2,392	645	181	5,025	10,086		10,539	83.1	77.2	2,047	1,263	231	1,347
Tennessee Central	May	284	312		348	399	47	49	4	60	60	21	15	121	265		283	76.1	71.1	83	25	17	38
	5 mos.	284	1,517		1,671	1,774	225	232	25	316	280	106	77	616	1,344		1,329	80.5	74.9	327	126	—5	88
Texas & Pacific	May	1,828	4,710	278	5,642	6,265	529	650	88	924	1,075	296	219	2,467	4,509		4,856	79.9	77.5	1,133	374	350	441
	5 mos.	1,828	23,096	1,332	27,756	31,339	2,619	3,567	478	4,715	5,363	1,497	1,120	11,955	22,272		24,537	80.2	78.3	5,484	1,810	1,362	1,665
Texas Mexican	May	161	258		300	333	54	47	6	38	34	12	14	91	221		196	73.7	58.9	79	35	14	39
	5 mos.	161	1,126		1,299	1,464	226	244	32	176	174	61	64	410	992		1,001	76.4	68.4	307	149	43	103
Toledo, Peoria & Western	May	239	552		575	638	58	76	7	46	52	13	49	172	365		391	63.4	61.3	211	89	51	72
	5 mos.	239	2,633		2,741	3,149	281	370	35	253	255	67	246	839	1,812		1,970	66.1	62.5	929	391	202	329
Union Pacific	May	9,727	35,967	2,006	41,195	39,897	4,688	4,664	779	7,784	7,584	2,628	1,174	14,473	30,248		29,991	73.4	75.2	10,947	7,100	2,231	2,028
	5 mos.	9,727	168,969	8,506	192,210	200,832	22,109	23,477	4,013	36,843	38,297	12,929	5,655	68,182	143,570		149,916	74.7	74.6	48,640	33,123	8,542	10,934
Wabash	May	2,423	7,919	227	9,102	9,400	828	949	125	1,371	1,348	475	301	4,296	7,263		7,360	79.8	78.3	1,839	654	397	449
	5 mos.	2,423	38,075	1,327	43,873	47,034	3,892	4,668	625	6,143	6,968	2,428	1,569	20,455	34,347		37,342	78.3	79.4	9,526	3,174	2,391	2,155
Ann Arbor	May	294	654		661	668	60	66	7	156	143	44	19	307	563		572	85.2	85.7	98	53	46	52
	5 mos.	294	2,980		3,000	3,451	265	324	33	655	790	220	108	1,454	2,587		3,119	86.2	90.4	413	254	133	—73
Western Maryland	May	841	3,503		3,604	4,124	509	656	57	796	921	308	110	1,272	2,862		3,263	79.4	79.1	742	470	578	637
	5 mos.	841	15,523		16,141	20,600	2,508	3,186	292	3,852	4,272	1,542	569	6,221	14,115		15,890	87.5	77.1	2,026	1,284	1,880	3,532
Western Pacific	May	1,188	4,204	166	4,460	4,426	537	626	88	693	593	237	240	1,547	3,323		3,450	74.5	78.0	1,137	573	484	461
	5 mos.	1,188	19,890	739	21,111	21,598	2,441	2,928	425	3,393	3,447	1,187	1,240	7,484	16,155		17,462	76.5	80.8	4,956	2,558	2,113	1,861

NEW PRODUCTS REPORT

Heavy-duty Fork Lift (RA-1)

Power to operate this high-capacity lift truck is supplied by a 275-hp diesel engine turning a DC and an AC generator. The power is transmitted through four 75-in. rubber-tired electric wheels. The 30-ton diesel-electric lift truck has a turning radius of only 26 feet and can lift a loaded truck trailer up to 20 feet off the ground. Controls are similar to those in diesel-electric locomotives, according to the manufacturer. *R. G. LeTourneau, Inc.*

Voltage Regulators (RA-2)

Transistorized voltage regulators for use in controlling output of auxiliary generators in locomotives and rail cars are now available in a 125-volt size. The 125-volt model is 10¾ in. high, 10⅜ in. wide, 8-9 64 in. deep, and weighs 22 lb. Like the earlier 75-volt model, it holds the desired voltage within 1% plus or minus; requires no shock mounting, and needs no maintenance because there are no moving parts. *Fairbanks, Morse & Co.*

Vacuum Cleaner (RA-3)

Flor-O-Vac, a dry-pickup commercial vacuum cleaner of new design, features one head for hard floors, another for carpeted floors, and dual disposable dust cartridges. The head mounts directly to the front of the machine and has a swivel-bellows neck which allows side-to-side tilt up to 3 in., and up-and-down movement of ¾ in. This assures full contact with floor, regardless of unevenness. *Nobles Engineering & Manufacturing Co.*

Transistor Car Control (RA-4)

Rapid transit and commuter-type rail cars can be controlled through a transistorized control (SCM—simplified cam magnetic) which eliminates interlock and relay contacts in control circuits. Components are mounted on "plug-in" assemblies that make insertion foolproof. A single cam-shaft-type controller provides mechanical interlocking of power switches mounted on it. Control has been tested on GE diesel-electric locomotives. *General Electric Co.*

Equipment Cleaner (RA-5)

Tysol 196 is a concentrated liquid cleaner that mixes either with hard or soft water. It is said to be particularly adaptable for cleaning interiors and exteriors of locomotives and passenger and freight cars, including fruit, dairy, and meat cars. The liquid can be sprayed, mopped, or brushed on floors and vinyl surfaces, and is said by the manufacturer to rinse freely from windows and other surfaces. *Chemical Research Associates.*

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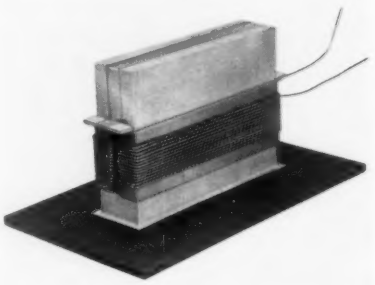
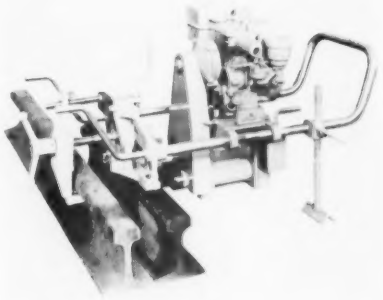


Sonic Cleaners (RA-6)

A magnetostrictive transducer, metallically bonded to a ¼-in.-thick 316-L stainless-steel diaphragm, is used in the Bendix Omnimite series of sonic cleaners. According to the manufacturer, the transducer diaphragm assembly will not break, crack, deteriorate, or in any way cease to function for the lifetime of the cleaning unit. It is adapted for use in the metal working, pneumatic, hydraulic, and electronic fields. *Bendix Corp.*



Portable Rail Drill (RA-7)

Two major improvements have been incorporated in the 1961 model of the Racine portable rail drill. One is a new clamping device for holding the drill firmly on single rail or over guardrails and switches. This device is said to provide automatic alinement of the machine. The other improvement is a ball-type torque clutch which is used for protecting the bit and engine against overload. *Racine Hydraulics & Machinery, Inc.*

Joint Surfacing Device (RA-8)

The new RMC Joint Surfacing Device is designed to give direct readings of low joints to the operator of a jack tamper. It consists of two 14-ft aluminum beams carried one over each rail by the tamper and supported at the front by a 4-wheel cart. Readings are given for each rail independently of the other by means of spring-tensioned cables which are attached to the ends of the beams. *Railway Maintenance Corp.*

Diesel Engines (RA-9)

The new MP series of Murphy diesels includes four- and six-cylinder models with either 1,200 or 1,400 rpm, which are available as fan-to-flywheel and radiator-to-flywheel engines with skid or cast iron mounting. The MP diesels feature radiator or heat exchanger type cooling, extended shaft and outboard bearings. Some models are available as altitude engines which maintain sea level ratings up to 9,000 feet. *Murphy Diesel Co.*

Tank Car Lining (RA-10)

After 18 months' handling phosphatic liquid for fertilizers, tank car GATX 77221, lined with plastisol, was found to have withstood the severe service to which it had been exposed. The 8,000-gallon tank is one of two sprayed in October 1959 with phenolic primer and Unichrome Super 5300 Polyvinyl chloride (PVC) 125 mils thick, then baked to 365 deg F, plus or minus 10 deg, for several hours. *Metal & Thermit Corp.*

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Market Outlook

Carloadings Rise 34.9% Above Previous Week's

Loadings of revenue freight in the week ended July 15 totaled 573,306 cars, the Association of American Railroads announced on July 20. This was an increase of 148,322 cars, or 34.9%, compared with the previous holiday week; a decrease of 33,508 cars, or 5.5%, compared with the corresponding week last year; and a decrease of 11,767 cars, or 2.0%, compared with the equivalent 1959 week.

Loadings of revenue freight for the week ended July 8 totaled 424,984 cars; the summary, compiled by the Car Service Division, AAR, follows:

REVENUE FREIGHT CARLOADINGS
For the week ended Saturday, July 8

District	1961	1960	1959
Eastern	60,205	62,989	85,993
Allegheny	65,994	73,453	95,927
Pocahontas	15,990	19,330	20,883
Southern	73,741	76,703	91,157
Northwestern	74,591	84,582	101,536
Central Western	94,173	96,600	109,180
Southwestern	40,290	44,122	47,637
Total Western Districts	209,054	225,304	258,353
Total All Roads	424,984	457,779	552,313
Commodities:			
Grain and grain products	58,156	59,594	63,474
Livestock	2,344	2,713	3,722
Coal	23,706	23,253	25,672
Coke	6,305	5,230	9,294
Forest Products	24,864	27,299	35,488
Ore	45,483	64,215	69,885
Merchandise l.c.l.	23,617	28,783	38,816
Miscellaneous	240,509	246,692	305,962
July 8	424,984	457,779	552,313
July 1	533,573	547,893	574,102
June 24	600,001	641,337	697,797
June 17	602,153	649,503	724,278
June 10	593,304	648,658	709,841
Cumulative total, 27 weeks	14,016,746	16,147,569	16,820,701

PIGGYBACK CARLOADINGS.—U. S. piggyback loadings for the week ended July 8 totaled 8,931 cars, compared with 8,526 for the corresponding 1960 week. Loadings for 1961 up to July 8 totaled 295,236 cars, compared with 284,864 for the corresponding period of 1960.

IN CANADA.—Carloadings for the seven-day period ended July 7 totaled 70,436 cars, compared with 102,528 for the previous nine-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada		
July 7, 1961	70,436	20,022
July 7, 1960	67,576	23,085
Cumulative Totals		
July 7, 1961	1,718,704	647,023
July 7, 1960	1,863,676	761,424

New Equipment

FREIGHT-TRAIN CARS

► *General American.*—Has received orders for 75 additional 30,300-gal., 66-ft-long tank cars (RA, June 26, p. 63). All 164 of the high capacity tank cars ordered to date will be built in GATC's Sharon, Pa., shops.

PASSENGER-TRAIN CARS

► *New York City Transit Authority.*—Awarded contract July 17 to St. Louis Car for 236 51-ft, 44-seat subway cars for the IRT division. The cars will be coupled in "married pairs" (with motorman's cab at only one end of each car). They will cost $110,790 apiece. Two sample cars will be delivered in 210 days, 10 more 30 days later, and the remainder at the rate of 30 cars per month thereafter. The order is slightly larger than the 220 cars for which NYCTA had sought bids (RA, June 12, p. 39).

LOCOMOTIVES

► *Union Pacific.*—Ordered 11 diesel-electric freight locomotive units at a cost of more than $2.6 million. All are scheduled for August delivery. Alco will supply four 2,400-hp DL-640's; General Electric, four 2,500-hp U25B's; and EMD, three 2,400-hp SD-24's. All units are powered by turbo-supercharged 16-cylinder diesel engines. They will be assigned to main-line, high-speed freight service.

SPECIAL

► *Indonesia.*—Plans to acquire railway equipment and materials valued at more than $460 million. Bids may soon be invited, according to the U.S. Department of Commerce, for supply of 490 diesel locomotives ranging from 230 hp to 1,300 hp, 51 steam locomotives, 90 passenger-train cars, 145,000 tons of rail, 14,586 ordinary switches, and other items. Copies of the general plans are available from the Trade Development Division, Bureau of Foreign Commerce, U.S. Department of Commerce, Washington 25, D. C.

Orders & Deliveries

► *Orders Decrease.*—Orders were placed in June for 1,214 freight cars, compared with 3,666 in May. June 1960 orders totalled 321. Deliveries in June totalled 3,142, compared with 3,360 in May and 6,042 in June 1960. The backlog of cars on order and undelivered as of July 1, 1961, was 11,821, compared with 13,964 on June 1 and 29,555 on July 1, 1960.

TYPE	ORDERED June, 1961	DELIVERED June, 1961	UNDELIVERED July 1, 1961
Box—Plain	270	1,156	2,836
Flat	405	252	1,332
Gondola	0	17	1,956
Hopper	80	1,133	2,560
Cov. Hopper	165	169	575
Refrigerator	70	89	1,602
Tank	164	275	639
Caboose	0	1	200
Other	60	50	121
TOTAL	1,214	3,142	11,821
Car Builders	1,079	2,085	3,332
Railroad Shops	135	1,057	8,489

Oversize Trailers Move East by Rail

Twenty-four oversize tank trailers —perhaps forerunners of tomorrow's highway freight vehicle—are moving east by rail piggyback from manufacturing plants in Kansas City to a New York airport, where they'll be used for refueling military aircraft. The 10,000-gallon tankers are being routed Burlington-Erie-Lackawanna, and they're riding General American's G-85 flat cars, which will accept the trailers' 102-inch width. Maximum permitted trailer width for highway use is now 96 inches—but, as one Burlington officer pointed out, shippers are demanding high-cube vehicles and the 102-inch width (permitted now for buses in some states) may be one answer. Most efforts to date to increase trailer capacity have centered on increasing length and-or height. The trailers, shipped with tractors, are being built by Columbia Steel and Standard Steel Works, of Kansas City. G-85 flat cars will take the 102-inch units with about two inches to spare—but they won't fit on most other types of existing piggyback flat cars.

Firemen Defended at Hearing

Last week's hearings of the Presidential Railroad Commission on the so-called "featherbedding" dispute heard testimony from train crewmen on the need for firemen in switching crews.

Maurice F. Nagle and William McCabe, engineers on the Union Railroad, appeared to counter earlier testimony by Union Vice President and General Manager B. R. Gould. Mr. Gould had described switching operations on the Union, one of the largest switching roads in the country, as similar to switching operations on industrial installations where a second man in the cab is not required.

Engineer Nagle disputed the similarity of the operations. "A plant-assigned crew, as a minor part of its work, may occasionally perform work which is generally the task of the Union Railroad plant assigned crews," he said. "But the total work of the in-plant crews and the railroad crews is quite different."

A typical Union Railroad six-man crew, Mr. Nagle said, would switch in one day up to 319 cars, with the average output, as figured from switching lists, around 200 cars a day. In-plant switching operations, Mr. Nagle said, were a different matter, with industrial crews doing specialized work in a confined area.

Engineer McCabe told the commission that from 1903 to as recently as 1956, the identical work performed by one industrial switcher locomotive at a steel plant had been performed by a mechanical "mule." The cars were dropped by gravity to a point where the "mule" would get behind them and push them up an incline to the dumper where they would be unloaded by the dumper mechanism, Mr. McCabe said. "The in-plant engine does not perform either the complex switching operations or the volume of work performed by the railroad crews," Mr. McCabe concluded.

Other testimony by the operating brotherhoods on the need for firemen centered on the problems of switching in congested warehouse districts and across city streets.

W. P. Dunn, a B&M engineman appearing as a witness for the five operating unions, told the commission that peculiarities of operation in urban yards introduced special complications. B&M's 27 yards in the Boston terminal area "present particular problems with respect to operations," Mr. Dunn said. "They are problems of congestion and hazardous operation due to lack of straight switching track in these yards. Practically all operations are on tracks which curve in one direction or another. In addition, there are public crossings, interlocking signals and many other factors, including power operated switches over which we have no control. Moreover there is a great deal of street switching. Many of the yards are criss-crossed by roads which have heavy automobile traffic and other traffic. In many places the clearances are close. There are many overhead obstructions such as bridges . . ."

All of these add up, Mr. Dunn asserted, to the need of a helper in properly maneuvering the equipment safely through the maze of hazards in the city yard areas, and "make it absolutely essential to have both sides of the engine manned at all times."

Wagner Succeeds Paddock As President of ORC&B

Louis J. Wagner, senior vice president, Order of Railway Conductors and Brakemen, has been named president of that organization succeeding James A. Paddock who resigned because of ill health.

Mr. Wagner was ORC&B's top officer on the DM&IR prior to his election to national office. He was named senior vice president at the 1958 ORC&B convention and has been acting president during Mr. Paddock's illness.

James E. Magill, a senior officer on the board of directors and ORC&B vice president since 1946, will succeed Mr. Wagner in the organization's second highest office.

Mr. Paddock, who will continue to serve in an advisory capacity, said, "Since there are many major problems of great importance at the present time in the railroad industry and within the Order, I strongly feel that our members deserve to have as their chief executive a president with authority in his own right rather than as acting president."

DIESEL-HYDRAULIC TESTS (Continued from page 24)

emphasize that direct horsepower-for-horsepower comparisons are virtually impossible; there simply is no comparable diesel-electric against which to rate the new power.

Quite aside from performance, a ruling factor in the units' eventual success or failure is one which can be determined only by experience: maintenance cost and availability. Inevitably, the new locomotives will present some maintenance difficulties, if only because they are different from other locomotives in use and will be, in a sense, "orphans" among the diesel-electrics.

The builder will provide service and training for the first year. It remains to be seen what will happen when the time comes for major repairs in a locomotive shop designed to service diesel-electrics. How easily and quickly maintenance forces will learn to deal with the high-speed four-cycle engines, hydraulic transmissions, Cardan-shafts, gearing and unfamiliar truck design, is an open question.

The main mechanical portion of the locomotive has been built to inch measurements and U.S. specifications. But what about standard components (engines, transmissions, etc.) built to metric measurements and European standards (in screw threads, for example)?

Mr. Lamprecht admits the problems of maintaining the "orphans among the road's over 2,000 diesel electrics," and also admits that because of these problems the standards of performance and freedom from maintenance costs of other kinds will have to be considerably higher than might otherwise be the case to warrant repeat orders.

Rio Grande observers, on the other hand, point out that for a relatively small road with about 200 diesels spread over almost the entire range of recent U.S. designs, the "orphan" problem will not be as serious. Service and training (with the language barrier coming in for considerable attention) rank higher among reservations on the Rio Grande side, however.

For both roads, plagued with traction-motor troubles on stiff mountain grades, a major hope is that the hydraulics' generally rugged construction, high overload capacity and high adhesion (German engineers customarily allow an adhesion factor of 0.33) will produce substantial maintenance savings and improved availability, in a degree sufficient to offset some of the other problems.

Defunct CA&E Permitted To Sell Its Properties

Chicago, Aurora & Elgin, once a bustling commuter line, has received the final OK (from the Illinois Commerce Commission) to go out of business and sell its properties.

The 54-mile electrified line quit hauling passengers in June 1957. Freight service was maintained until June 1959. Since then, the line has stood idle—except for about 20,000 feet of track over which three other roads (Burlington, Milwaukee and Indiana Harbor Belt) are providing service. Under the ICC order, CA&E may negotiate with the three roads for sale of the trackage they're now using.

CA&E served an area of approximately 300,000 population. Its own line terminated at suburban Forest Park, and service to downtown Chicago was routed over Chicago Transit Authority tracks.

Since 1957, various plans have been advanced for a CA&E revival—all were derailed. Many one-time CA&E commuters now ride Chicago & North Western—which parallels CA&E through many of Chicago's western suburbs.

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PEOPLE IN THE NEWS

AKRON, CANTON & YOUNGSTOWN.—**John P. Monks** appointed traffic manager—sales and service, Akron, Ohio, succeeding **James A. Beech**, retired. **Emil Tripp** named district traffic manager, 233 Broadway, New York, succeeding Mr. Monks. Mr. Tripp will retain the sales-service responsibilities for the territory heretofore under his jurisdiction at the Philadelphia office, which is now combined with the New York agency. **David K. Heidish**, who has been acting freight claim agent since December 1960, appointed freight claim agent.

BALTIMORE & OHIO.—**Kenneth H. Ekin**, who became general counsel on June 1, has announced the following appointments: **George C. Doering**, general attorney, appointed senior general attorney; **Frederick W. Doolittle, Jr.**, assistant general counsel, named general attorney; **Andrew C. Armstrong, Robert O. Smith, Jr.**, and **Richard B. Allen**, assistant general solicitors, appointed assistant general counsel.

BIRMINGHAM SOUTHERN.—**Earl W. Bean**, chief engineer and roadmaster, Fairfield, Ala., retires July 31. **Claude Johnston, Jr.**, chief industrial engineer, appointed chief engineer, with responsibility for maintenance of way and industrial engineering departments.

CANADIAN NATIONAL.—**J. R. Bannerman**, superintendent of safety, appointed superintendent of safety and fire prevention—system, Montreal. **D. P. MacKinnon**, research engineer, department of research and development, appointed operation assistant, Montreal, succeeding **A. C. Weaver** (RA, June 26, p. 66). **E. W. Turner** named general supervisor of perishable traffic—system, Montreal, succeeding the late **D. C. McVeigh**.

CHESAPEAKE & OHIO.—**Estel L. Davis** named assistant general passenger agent, Cincinnati, and **William F. Galvin** appointed division passenger agent at Charlottesville. New general agents at Norfolk, Louisville, and Cincinnati are **James A. Milburn, James M. Hamrick**, and **Floyd E. Osborn**, respectively.

C. T. Bartlett, formerly assistant trainmaster at Cane Fork, W. Va., is now trainmaster at Handley; **R. W. Vawter** has been transferred from Handley to Grand Rapids, Mich., as assistant trainmaster; **R. W. Foster** has succeeded C. C. Royal, retired, as assistant trainmaster at Saginaw, and **A. H. Honeman** has succeeded Mr. Foster as assistant trainmaster at Grand Blanc, Mich.

J. L. Campbell appointed material standards officer, with headquarters at Huntington, W. Va.

MISSOURI PACIFIC.—**Harry L. Schaeffer**, vice president-traffic, St. Louis, promoted to vice president—executive department, Houston, Tex., effective Aug. 1. **F. J. Conrad**, vice president-traffic, Rock Island, Chicago, has been appointed to succeed Mr. Schaeffer.

NICKEL PLATE.—**E. G. Psolla**, an assistant to director of personnel, Cleveland, appointed assistant director of personnel there, succeeding **L. G. Mosher**, retired (RA, July 10, p. 38). **E. J. Fisher**, an assistant to director of personnel, named assistant manager of personnel. **Orville Hahn** and **A. W. Jenkins** appointed personnel assistants. Mr. Hahn was formerly an assistant to director of personnel and Mr. Jenkins was a special accountant, dealing primarily with personnel matters.

Paul A. White, coal freight agent, Cleveland, appointed coal traffic manager there, succeeding **Norman E. Goldenbogen**, retired.

NORTHERN PACIFIC.—**Frank S. Farrell**, assistant general solicitor, appointed general solicitor. **Reginald Ames**, assistant general solicitor, advanced to assistant general counsel. **H. K. Bradford, Jr.**, attorney, named assistant general solicitor.

PENNSYLVANIA.—**Clair I. Clugh**, assistant chief mechanical officer, Philadelphia, retired July 1.

ROCK ISLAND.—**John B. Buffalo**, superintendent, Rock Island division, Rock Island, Ill., named assistant general manager, El Reno, Okla., succeeding **Robert W. Anderson**, promoted to assistant to the president, Chicago. Mr. Buffalo's successor is **William F. Thompson**, superintendent, Southern division, El Reno, who in turn is replaced by **Arthur E. Anderson**, transferred from the Arkansas division, Little Rock, Ark. **William J. Pasta**, assistant superintendent, Des Moines, Iowa, replaces Mr. Anderson.

SANTA FE.—Effective Aug. 1, **Francis N. Stuppi**, assistant to the operating vice president, Chicago, promoted to general manager, Western Lines, Amarillo, Tex., succeeding **Guy R. Buchanan**, retiring. **Warren R. Henry**, assistant general manager, Galveston, Tex., replaces Mr. Stuppi and in turn is succeeded by **T. W. Goolsby**, superintendent, Amarillo.

SOUTHERN PACIFIC.—**Vernon Eaves**, general auditor and assistant secretary, SP lines in Texas & Louisiana, Houston, appointed assistant general auditor, SP, San Francisco. **Frank H. Coyne, Jr.**, manager of systems research, appointed assistant general auditor, San Francisco. **E. G. Suelflohn** succeeds Mr. Coyne. **J. M. Halliday** and **J. P. Gallagher** appointed assistant managers of systems research. **F. A. Arnerich** named assistant manager, data processing.

H. E. Alsing, secretary, board of pensions, retires July 31.

Supply Trade

W. A. Cubbage, circulation manager, **Simmons-Boardman** railway publications, has been appointed to the New York advertising sales staff, **Railway Age**. He will handle the territory formerly assigned to **J. C. Lyddy**, who resigned. Mr. Cubbage has been a member of the Simmons-Boardman circulation department since 1951. Prior to that he was with the Pennsylvania's passenger-traffic department.

The National Railway Appliances Assn. moved to Room 590, 332 South Michigan Avenue, Chicago 5, Ill., effective May 17. **S. C. Johnson** is assistant secretary.

William R. Mogg, assistant director of product development **Crucible Steel Co. of America**, has been appointed assistant director of metallurgy—technical services.

Robert L. Wicker has been appointed manager of distributor sales of **American Hoist & Derrick Co.** of St. Paul, Minn.

Cardwell Westinghouse Co. and its subsidiary, **Universal Railway Devices Co.**, both of Chicago, have appointed **Robert J. Wylie Co.**, 520 Pioneer Bldg., St. Paul, Minn., as resident representative.

Raymond A. Frick and **Victor L. Persbacker** have been elected vice presidents of **American Brake Shoe Co.**, New York, and have been named to the Management Committee, effective Aug. 1. Mr. Frick was named also group executive for railroad products; he is executive vice president of the Railroad Products Division and will succeed **Stephen S. Conway** as group executive and division president upon Mr. Conway's retirement on Aug. 1. Mr. Persbacker will continue as comptroller of the firm.

OBITUARY

James P. Reinhold, 55, assistant to the president of the **Santa Fe**, at Chicago, died July 14 while in Washington, D. C., on business.

Robert I. Huyler, 71, who retired in 1959 as president of the **Lehigh & Hudson River**, Warwick, N. Y., died of a heart attack July 16 at his home in that city.

WASHINGTON ENTERS WP BATTLE (*Continued from page 10*)

limited to the 18 projects, Mr. Biaggini said, but "I feel sure that substantial economies and benefits can result from such items as the pooling of power and equipment, consolidation of agencies and in a number of other important areas. Given a cooperative management on the Western Pacific side of the picture, with a real desire to get these things done, I am sure that substantial additional progress could be made."

SP, Mr. Biaggini added, has no intention of packing WP's board with Southern Pacific people, in the event control is permitted. It is "not anticipated that more than two or three Southern Pacific representatives would become directors of Western Pacific. These representatives should be sufficient to impress the remainder of the board with urgency of going forward with the coordination of the two properties and the need for providing a level of rates and services which will permit them both to meet the pressures of competition from other forms of transportation."

Other early witnesses fortified the record as to the competitive situation facing western railroads.

Ernest W. Williams, Jr., professor of transportation at Columbia University's Graduate School of Business, said data on the growth of trucking in the West suggests that its impact "has been even more severe there than in the nation as a whole, both in respect of its growth relative to rail and in respect of its scope of operations as measured by commodity penetration and length of haul."

In the present situation, he said, "the railroads are assailed by essentially specialized carriers, each capable of doing a part of the transport task more efficiently than the railroads." Competition among rail, highway, water and air carriers, he indicated, presents an adjustment problem in finding ways to use each mode so as to produce the greatest efficiency. But, he added, "the tendency is strong to create new capacity in the non-rail forms without any noteworthy reduction of rail capacity, hence to increase the aggregate of the transportation plant which the transportation function must support, at a rate faster than the growth of traffic."

Railroad technology, Dr. Williams declared, "is not mature, much less obsolescent. . . Unfortunately, some of the advantages inherent in the technology have long been dissipated by undue dispersion of traffic over a multitude of routes, continued operation of duplicating services and facilities and the continuance of excessive capacity in an industry which has as one of its important characteristics decreasing unit costs as capacity operations are more nearly approached."

Reduced earnings coupled with increased costs, he noted, have prevented the railroads from taking advantage of "the great opportunities which technological advances have opened out. The result is that we have no truly modern railroads. . ."

As Dr. Williams views it, the urgent need is to reduce excess capacity and to "concentrate traffic in large flows which permit full advantage to be taken of improvements in the art of transportation and to employ modern management tools and methods within enterprise units of sufficient size to support them to full advantage." Thus he favors parallel mergers or coordinations and looks with a frown on end-to-end consolidations, which may produce "more forceful railroad competition resulting in the increase of waste and duplication rather than the reverse."

SP's parallel coordination plans contemplate a variety of joint-use propositions. Major savings, as SP figures them, would result from joint use of WP track between Weso and Flanigan, Nev., $709,000; coordinations at Oakland terminal, $1,252,000; coordination of yard and mechanical services at Sacramento, $603,000; coordination of mechanical services at Sacramento general shops, $592,000; coordination of yard and mechanical services at Stockton, Calif., terminal, $686,000. Other line-haul coordinations would involve routings between Marysville and Oroville, Calif.; Sunol and Stockton, Calif.; Flanigan and Fernley, Nev.; Weso, Nev., and Stockton; Sacramento and Woodland, Calif.; Marysville and Chico, Calif.; Oakland and San Francisco (including elimination of WP's barge operations); Oakland and Sacramento; Sacramento and Cannon, Calif.; Sacramento and Pittsburg, Calif. Terminal operations would be coordinated at San Francisco and San Jose, in addition to Sacramento, Oakland and Stockton.

Dividends Declared

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—5% non-cumulative preferred series A, $1.25, quarterly, payable Sept. 28 to holders of record Sept. 8 and again Nov. 30 to holders of record Nov. 10.

MICHIGAN CENTRAL.—$25, semi-annually, payable July 31 to holders of record July 21.

NORFOLK & WESTERN.—common, $1, quarterly, payable Sept. 8 to holders of record Aug. 10; adjustment preferred, 25¢, quarterly, payable Aug. 10 to holders of record July 20.

SANTA FE.—30¢, quarterly, payable Sept. 1 to holders of record July 28.

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You Ought To Know...

A proposed White House message to Congress calling for changes in transportation legislation is reported to have been postponed until next year. One cause for the delay appears to have been difficulty that other Presidential messages have encountered on Capitol Hill.

Hotbox record for April, 448,133 miles per car set-off between division terminals, was best in last ten years. Nearest record was in 1954 when April mileage was 312,411 miles per set-off. Breakdown of statistics shows that journal lubricators, on 65% of cars as of Jan. 1, 1961, accounted for only 2,098 hotboxes, and waste-packed boxes were responsible for 3,702 hotboxes. Best individual record was set by Norfolk & Western with 3,335,417 car miles per hotbox car set-off.

Missouri legislation increasing weight and height limits of highway truck-trailers was vetoed by Gov. John M. Dalton (RA, July 17, p. 26). U. G. Lewellen, manager of the Missouri Bus & Truck Association, said "railroad lobbying" was behind the veto.

BRT President W. P. Kennedy opened the brotherhood's Tri-State meeting in Richmond, Va., July 21, by attacking the proposed ACL-SAL merger. He declared that it threatened the economic health of the southeast and said that what the railroads have in mind in mergers is "creation of competition-free monopoly with its arrogant disregard for the needs of the people and the needs of business."

BAR wants to abandon its 48.8-mile Greenville Branch, which runs from Derby, Me., to Greenville Junction. The road told the ICC that highway common-carrier service is available to all towns along the route.

A national census of transportation scheduled for 1963 has been endorsed by government and industry spokesmen before the House Post Office and Civil Service subcommittee. AAR Economist Burton N. Behling told the group that "neither government nor industry now has necessary data to make sound decisions regarding future planning." Other advocates included ICC Vice Chairman Rupert L. Murphy and Deputy Undersecretary for Transportation, Department of Commerce, Frank L. Barton.

New Jersey will apply for federal funds to underwrite a study of the feasibility of linking the state's major commuting roads with H&M's Hudson Tubes. Provision for such grants is contained in the new Housing Act (RA, July 10, p. 40).

Former M&StL President Robert W. Schroeder is one of a group purchasing Tucson, Ariz.'s bus system. Others buying the Tucson Rapid Transit Co. are H. P. Skoglund, president of North American Life and Casualty Co., and Earl S. Engle, president of John J. Grier Co., Chicago.

Two passenger fatalities in train-service accidents were reported by railroads in May. Seven passengers were injured in train accidents and 77 in train-service accidents. Eight employees on duty were killed in May and 1,474 injured.

NYC has sold its 46-year-old, two-story White Plains, N.Y., passenger station to Central Enterprises, Inc., of New York, which will develop the property for offices and shops. The road will retain space for its passenger needs.

Nominations are open for the 1961 Seley Awards for distinguished service to transportation under the sponsorship of the Transportation Association of America. The awards provide a gold medal to the person who has made the greatest contribution to progress in transportation during the year and a $1,000 scholarship and an additional $1,000 grant to a college of the winner's choice.

Nuclear materials were aboard a flat car derailed July 15 at Syracuse, N. Y. The Atomic Energy Commission hastened to assure the public that the derailment presented no danger of radioactivity in the area. Shipment consisted of irradiated fuel elements inside a heavily shielded, 55-ton cask. It was en route to the AEC's Nevada River plant at Aiken, S.C.

Creation of a holding company to permit diversification into non-transport fields will be proposed to Boston & Maine directors this fall, says B&M President Patrick B. McGinnis.

American Steel Foundries' net income for the quarter ended June 30, while below year-earlier levels, was more than double previous-quarter results. Joseph B. Lanterman, ASF president, said the sharp earnings increase was due in part to a general pickup in the economy and added that ASF subsidiary earnings offset the current slack demand from railroads for cast steel components.

The 10% federal tax on passenger travel would be remitted to the New Haven, or any other railroad in reorganization under the Federal Bankruptcy Act, under a proposal by Senator Prescott Bush (R.-Conn.)

NH Seeks $5 Million

Federal Judge Robert P. Anderson authorized the bankrupt New Haven last week to apply for ICC permission to issue $5,000,000 in trustee certificates.

The road's worsening cash position was further underscored when Judge Anderson decided to conduct a hearing on the appointment of a New Haven trustee—or trustees—on July 25, one week earlier than originally planned (RA, July 17, p. 10).

Meanwhile, NH President George Alpert asked Judge Anderson to withdraw his name from consideration as a trustee of the road during its reorganization. He suggested that the New Haven's trustee or trustees should bring a "fresh outlook" to its operation.

Advertisers' Index

American Car & Foundry, Div. of ACF Industries, Inc. ..12, 13
American Oil Co., Standard Oil of Indiana .....Back Cover

Cleveland Technical Center .....Inside Back Cover

Foster Company, L. B. 11

General Railway Signal Co. 26, 27

Hunt Company, Robert W. 45

Lenkurt Electric Company 30, 31

Miner, Inc., W. H. 3

Nolan Company, The 41

Okonite Company, The 41
Ortlip Co., Harry F. 14
Osmose Wood Preserving Co. of America, Inc. 43

Railway Educational Bureau, The 41
Reynolds Metal Co. 15, 16, 17, 18

Unity Railway Supply Co. 6
Union Switch & Signal Div. of Westinghouse Air Brake Co. 4

Weiss Company, B. M. 45

DATA SHEETS

A 32 page booklet, "Meters and Test Equipment" covers such subjects as Basic Meter Movements, Ammeters, Voltmeters, Insulation Testers, Decibel Measurements, Oscilloscopes, and the West Test Set. A brief test of the material covered is included. The booklet is designed to give the signal and communications maintainer or helper valuable information on his most important tool—his test equipment. Available at 50 cents each from

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'4 Freedoms'— More Needed?

There's a life-or-death race going on in transportation. It is the race between the railroads' "four freedoms" program, and the forces pushing a large part of the industry closer and closer to bankruptcy. No doubt, the "four freedoms" program is running strong. But there is even less doubt that the bankruptcy contestant is still far ahead, especially in Eastern Territory.

In this race, the time factor is decisive. The fact that the "four freedoms" program is steadily gaining supporters will not avail a thing, unless it wins a decided victory while leading railroads are still solvent. The experience of the New Haven demonstrates that maintaining the solvency of individual railroads makes no effective appeal to public support. Shippers, opinion leaders, politicians—they just aren't concerned at the threat of insolvency of particular railroads.

The most effective appeal that can be made to the self-interest of these people or to anybody else is to their personal safety. This nation's unreadiness —in the vital arm of transportation—for military conflict can be readily demonstrated. Fuel and manpower will be immediately in dangerously short supply from the moment hostilities begin—which means that main reliance for transportation service must, as always, be upon the fuel-conserving and manpower-saving railroads; and the railroads are far less well equipped greatly to expand their service than they were at the outbreak of World War II.

The gigantic highway system that this foolhardy nation persists in building at profligate expenditure in this hour of peril could well turn out to be, not a transportation facility but a transportation graveyard. Such a highway system can produce transportation in wholesale quantities only at times when there is a surplus of manpower and fuel. If the highway system weakens or destroys the only form of transportation that conserves fuel and labor, then it will be not an asset but a grave liability.

Distortion in this country's transportation development—resulting in the aggrandizement of wasteful methods and the starvation of methods which economize fuels, manpower and materials—has arisen from the explosive growth in the executive branch of government of three practically autonomous promotional organizations—one for air transport, one for highways, and one for inland waterways. Each is charged with advancing the interests of its own type of transportation, and without subordination of its objectives to the national interest as a whole. There is no branch of the executive department which has the duty to present the economic claims of railroad service in the light of the national interest.

There are able and dedicated leaders in the railroad industry who are strongly opposed to the establishment of a federal department of transportation, to which present governmental groups promoting aviation, highway transportation, and inland waterways would be subordinated; and to which would be added a group with the duty of promoting the national interest in healthy railroads. It is the belief of these leaders that the existence of a federal transportation department would provide an all-too-tempting mechanism by which the railroads could be taken over for government operation.

PERIL IN A CABINET ASSIGNMENT

This danger is genuine. The railroads have been taken over by the military a couple of times since World War II, in the course of union disputes, while the nation was, technically speaking, "at war." If there were a federal department of transportation, the temptation to "take over" would arise with every emergency; and "take over" by a Cabinet officer might not be easy to shake off.

That's the danger. It cannot be lightly dismissed. But neither can the danger of government "take over" as a result of widespread bankruptcy, and threatened failure of service in a national emergency, be shrugged off either. As a matter of fact, it was unsatisfactory railroad service which led to government operation in World War I. In Canada, it was railroad bankruptcy, not the existence of a transportation department in the Canadian government, which brought about the formation of the Canadian National Railways. In Britain and France, when their railways were nationalized, it was not a case of "take over" by a governmental Cabinet officer. Mediocre service and lack of adequate finances for improvements were among the principal causes.

There are rumors going the rounds that the federal government, as a substantial creditor of the New Haven, intends to have its say in the trusteeship and reorganization. Government ownership may just as easily creep in through the back door of government loans and bankruptcy, as through direct action by an ambitious Cabinet officer.

Unless this country can come up with a formula for governmental organization to deal with transportation which (1) will avoid the dangers lurking in a Cabinet transportation assignment, and (2) will cease subordinating railroads to other forms of transportation in governmental promotional programs—then the result is not going to be very satisfactory to anybody except Mr. Khrushchev.

The "four freedoms" program is excellent, but is it likely to be achieved until effective governmental machinery is provided to help attain and maintain these freedoms, against the claims of partisans in government of rival types of transportation?

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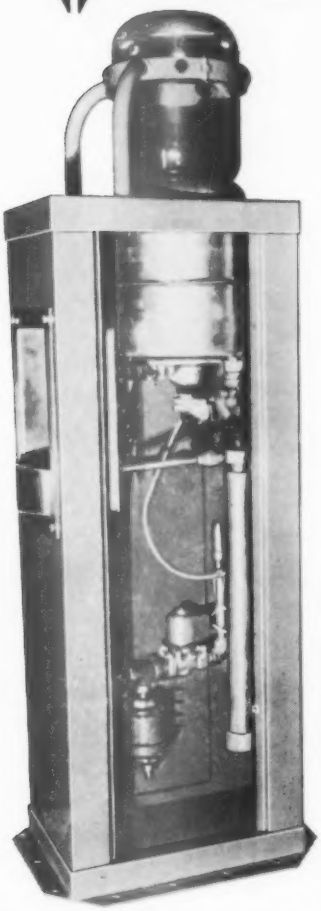

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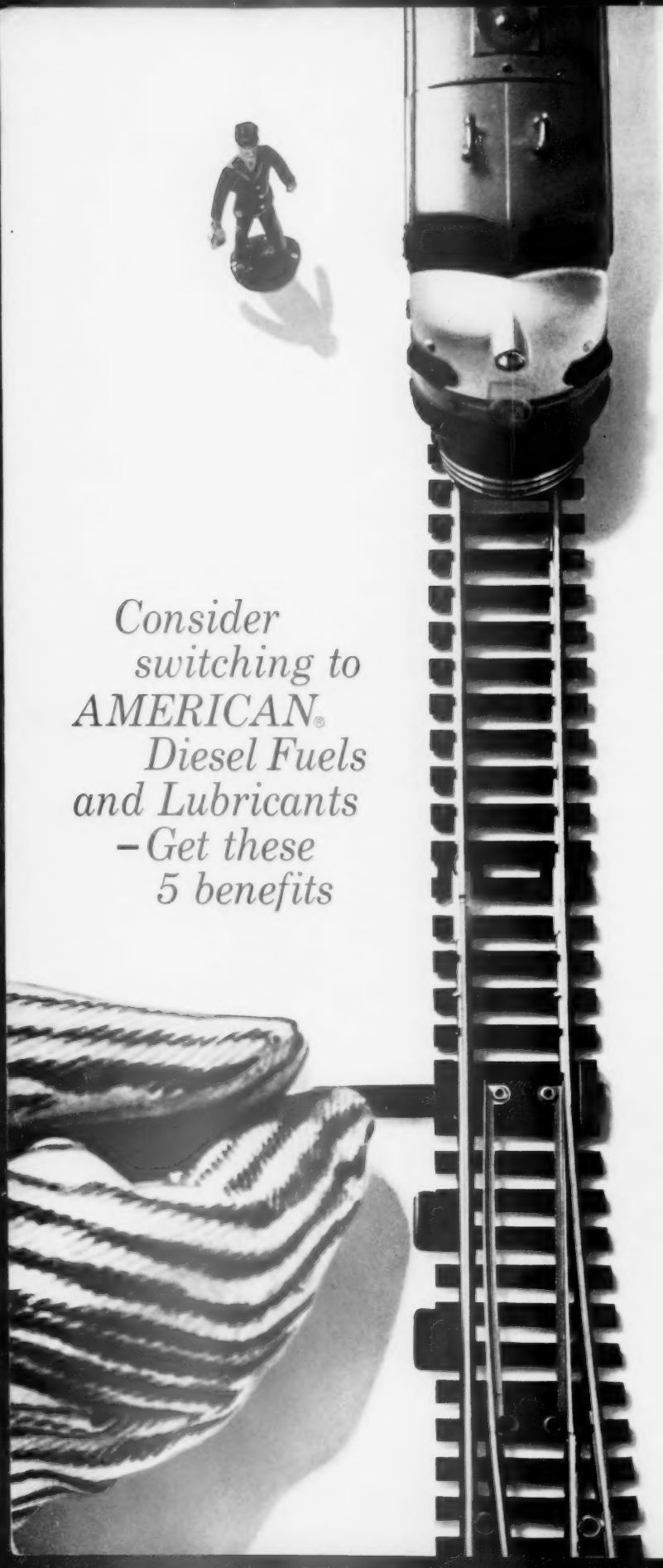

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